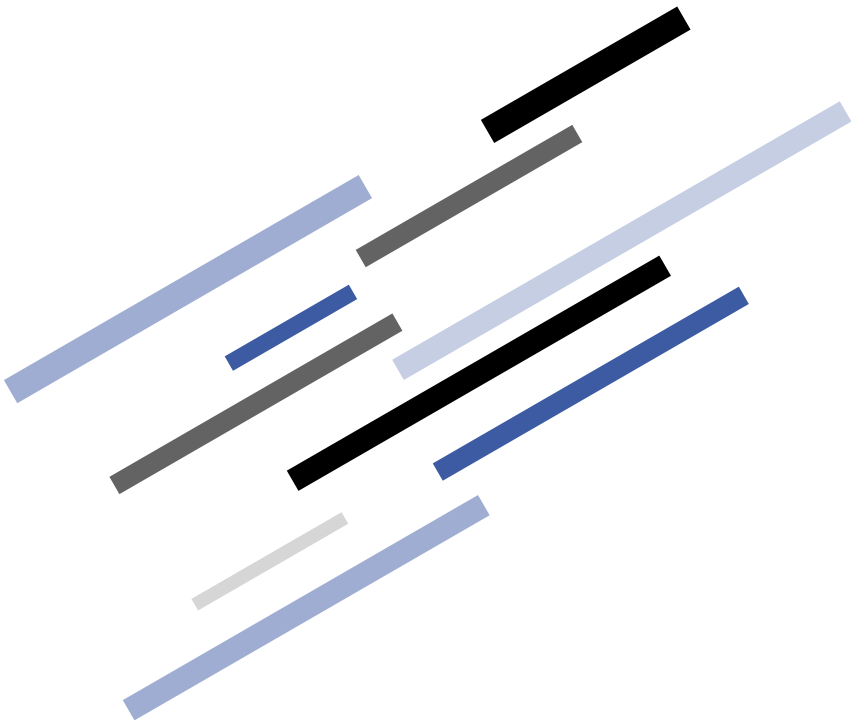
SK200-09

IMAGE SCANNER

SERVICE MANUAL

MANUAL NO. SK200-UM-251



GRAPHTEC

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1. OVERVIEW

1.1 Standard Specifications

Item		SK200-09
Document size		ANSI E to ISO A4 Maximum width: 965 mm; minimum width: 257 mm*1
Effective scanning area		Maximum width : 932.2 mm Maximum length : 25 m*2
Guaranteed scanning precision range*3		841 mm x 1189 mm
Document thickness		Up to 0.8 mm (including the carrier sheet)
Optical resolution		600 dpi
Interpolated resolution		100, 200, 300, 400, 600, 800, 1200 dpi
Main scanning system		Contact image sensor system (Five A4 sensors in a zigzag pattern)
Sub scanning system		Document travel (sheet through) system
Scanning speed*4		400 dpi, ISO A0 size High-speed scan: • Monochrome: 6 s • Grayscale: 6 s • 24-bit color: 18 s Normal scan: • Monochrome: 12 s • Grayscale: 12 s • 24-bit color: 56 s High quality scan: • Monochrome: 12 s • Grayscale: 12 s • 24-bit color: 56 s
Scanning precision*3		±0.1% ±5 pixels
Gradation		Monochrome : Bilevel, intermediate tones (dithering, error diffusion) Grayscale : 256 shades Color : 24-bit
Threshold value		Digital signal processor enables automatic setting of the threshold value (monochrome scans only)
Color space		sRGB compatible
Sensor	Total number of pixels	22,020 pixels
	Output	Color: 42 bits/pixel, Grayscale: 14 bits/pixel
	Light source	LED (RGB)
Interface		USB 2.0
Output		Image data
Rated power supply		100 to 120/200 to 230 VAC ±10%, 50/60 Hz
Operating environment		Temperature: 10˚C to 32˚C Humidity: 35% to 80% RH (non-condensing)
Power consumption		60 W or less (12 W or less in power-saving mode*5)
External dimensions (approx.)		1097 (W) x 322 (H) x 160 (D) mm (without stand) 1190 (W) x 405 (H) x 445 (D) mm (including low stand) 1185 (W) x 1100 (H) x 720 (D) mm (including high stand)
Weight (approx.)		24 kg (without stand) 30 kg (including low stand) 38 kg (including high stand)

*1 Load A4-size documents in the Landscape (horizontal) orientation.

*2 If the document is a long-length document, the actual length that can be scanned is limited by the available memory (hard disk or other data storage device) of the computer to which the scanner is connected, and also by the grade of the medium being scanned.

*3 Notes on scanning precision

The scanning precision may vary slightly depending on the grade and thickness of the medium being scanned, and on the operating conditions. The precision figures above were measured under the operating conditions described below.

• Special test chart: Mylar sheet #300

• Guaranteed precision conditions: Temperature: 23°C ±5°C; Humidity: 55% ±15% RH

*4 Including data-transfer time

The following system was used to measure the scanning speeds.

• CPU: Pentium 4, 3.2 GHz or better • Memory: 1 GB or more • Interface: USB 2.0

The scanning speeds may be slower depending on the PC system used.

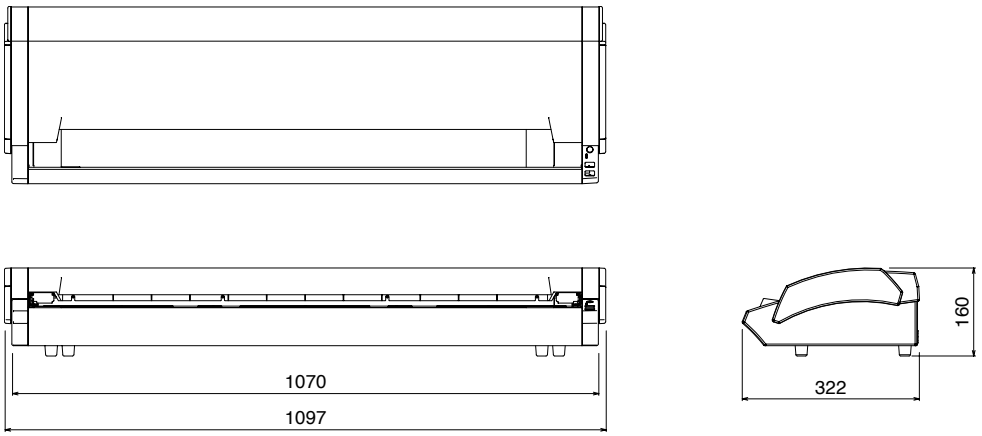
*5 Only when the power supply is 100 to 120 VAC.

1.2 External View

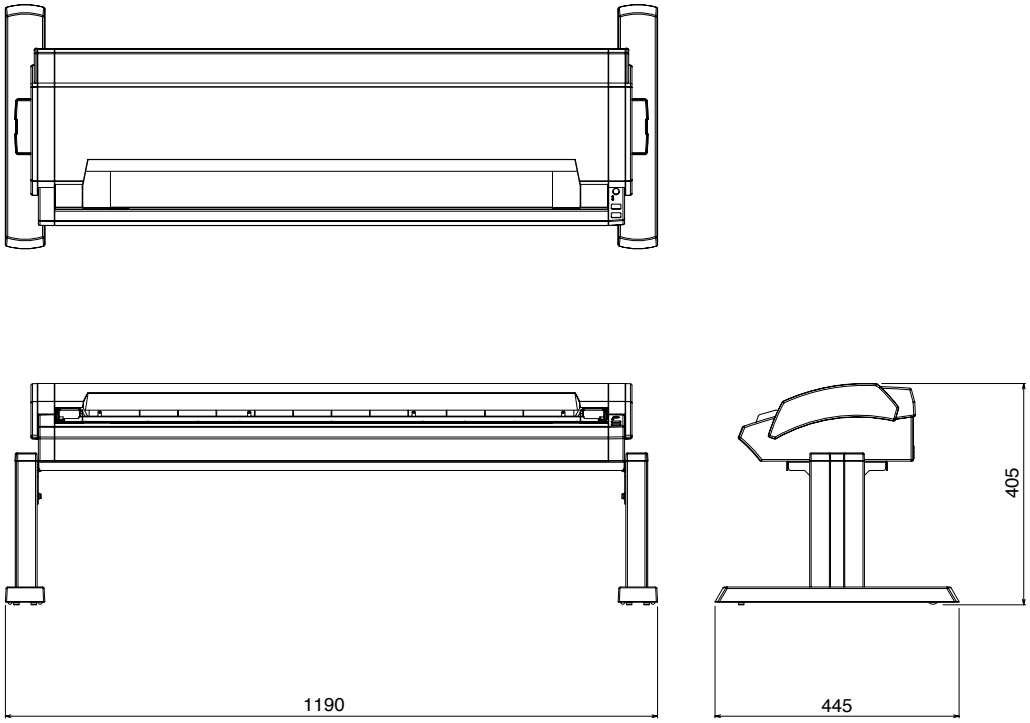
External Dimensions

Unit: mm

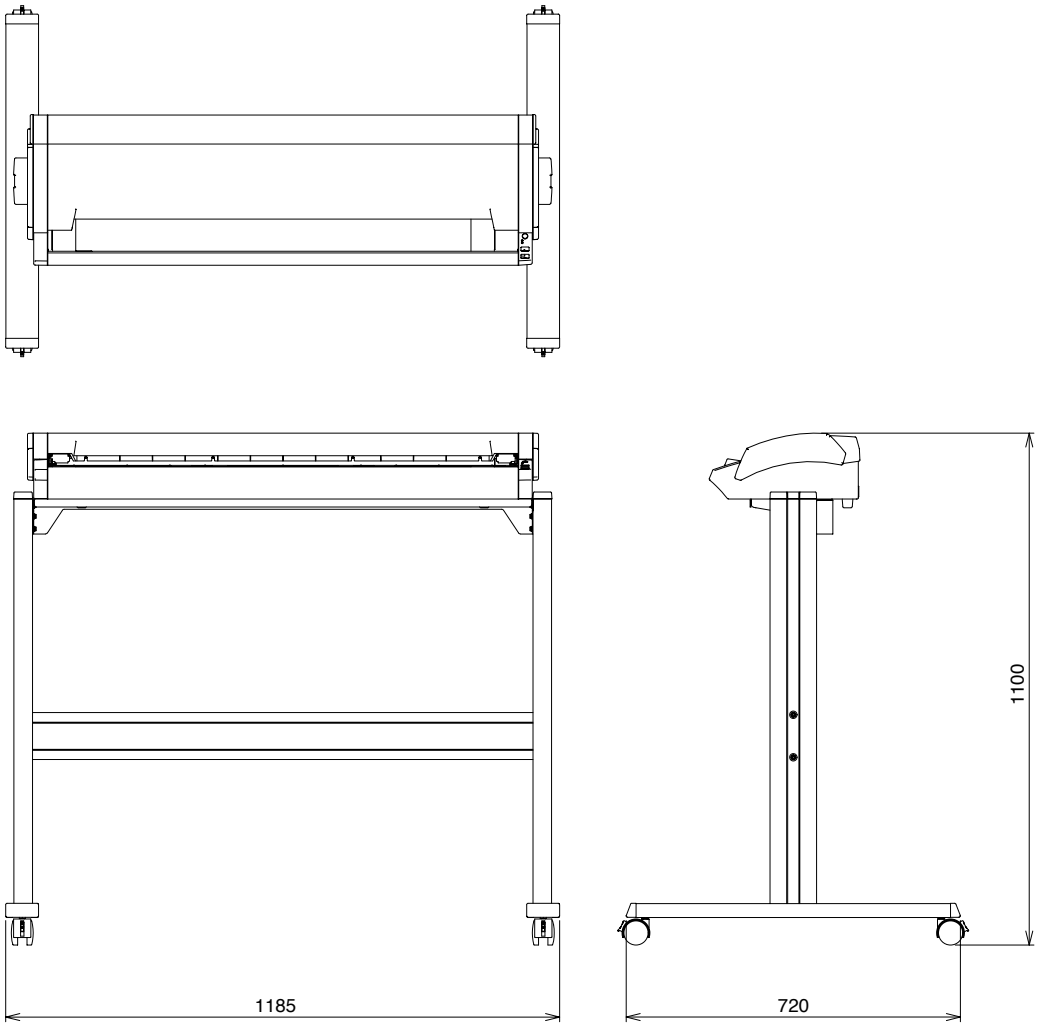
Dimensional accuracy: ±5 mm



When the scanner is mounted on the low stand



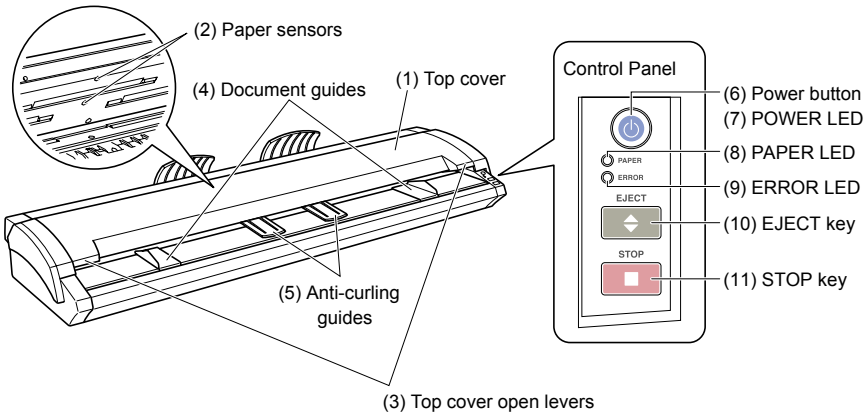
When the scanner is mounted on the high stand



2. PART NAMES AND FUNCTIONS

2.1 Part Names and Functions

Front View/Control Panel



Top cover

(1) Top cover.....Open the top cover to clean the document hold-down unit and contact glass plates.

(2) Media sensors.....These sense whether a document is present in the scanner.

(3) Top cover open levers.....Press these levers to open the top cover.
If the top cover is opened during a scanning operation, the operation will be stopped compulsorily.

(4) Document guides.....Use these guides to determine the position of a document when you load the document.

(5) Anti-curling guides.....These guides prevent the document from being caught up in the scanner during a scanning operation.

Control Panel

(6) Power button.....Controls the on/off status of the power supply to the scanner.

(7) POWER LED (blue).....Unlit: The scanner is turned off.
Lit: Lights when the scanner is turned on and remains lit while it is operating normally.
Flashing: Flashes when the scanner is in power-saving mode.

(8) PAPER LED (green).....Unlit: Normal status (Local status).
Lit: Lights when a document has been loaded.
Flashing: Flashes while image data is being scanned.

(9) ERROR LED (red).....Lit: Lights to indicate a hardware error.
Flashing: Flashes when any of the following occurs:
• A document is detected during the self-test when the scanner is turned on
• When a paper jam is detected
• When the top cover is open
• When the document length is shorter than the specified scan length*1

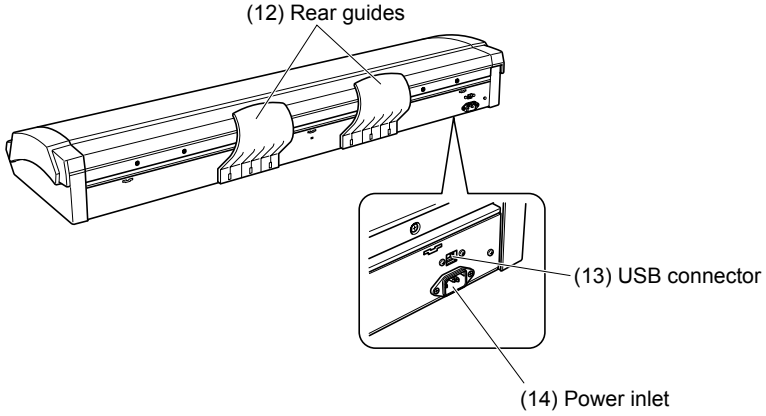
*1 When “Confirm” has been selected for the End-of-paper Processing setting in the driver software.

Unlit: Normal status

(10) EJECT key .....Press this key to feed the document.
If this key is pressed when the scanner is in document-loaded status, the document-loaded status is canceled and the document is ejected to the front of the scanner.
If this key is pressed after the scanning operation has been canceled or after scanning of the document was halted partway through the scanning operation, the document-loaded status is canceled and the document is ejected to the rear of the scanner.

(11) STOP key .....Compulsorily stops scanning of the document.
If the ERROR LED flashes when the top cover is in the closed status, press this key to suspend the scanning operation and check whether a paper jam has occurred.

Rear View



(12) Rear guides.....The scanned document is aligned with these guides when it is ejected to the front.

(13) USB connector .....Used to connect the USB interface cable.

(14) Power inlet .....Used to connect the power cable.

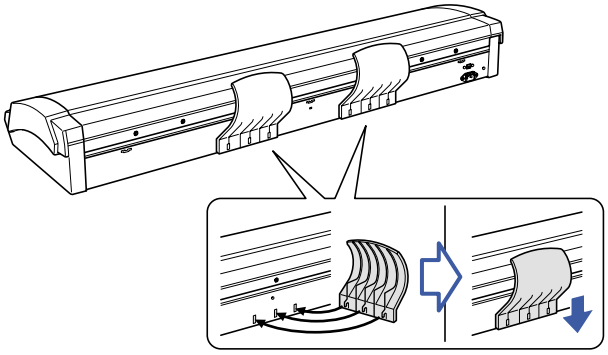
2.2 Attaching the Rear Guides

Always ensure that the rear guides are attached to the scanner unit before scanning a document, irrespective of the type of document to be scanned.

⚠Caution

The document may be damaged upon contact with the power cable if it is scanned without the rear guides in place.

(1) Insert the ribs on the inside of one of the rear guides into the corresponding slots at the rear of the scanner, and then push the guide downward.



(2) Repeat the procedure for the second guide.

Checkpoint

Detach the rear guides when moving or packing the scanner. Press lightly against each guide and then lift it up to detach it.

2.3 Attaching the Anti-curling Guides

Always ensure that the anti-curling guides are attached to the scanner unit before scanning a document, irrespective of the type of document to be scanned.

⚠Caution

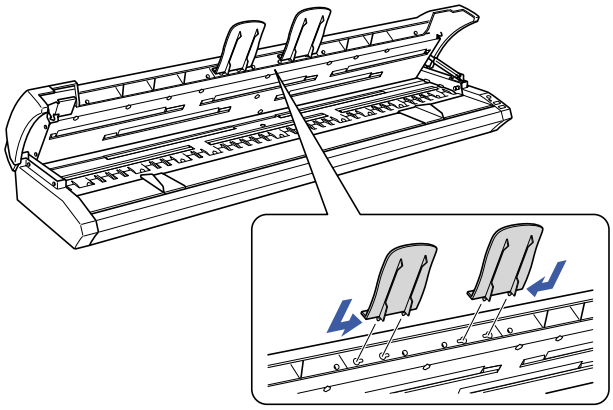
A document that has been returned may get caught up in the scanner and become damaged if it is re-scanned without the anti-curling guides in place.
Moreover, depending on the condition of the document, there is a risk of it becoming caught up in the scanner even when the anti-curling guides are used.
If your document falls into one of the following categories, either place the document inside the carrier sheet that is available as an option, or have the operator manually guide the returned document so that it does not get caught up in the scanner.

- Curled documents with a width that exceeds A2-size (420 mm)
- Fragile documents with a width that exceeds A2-size (420 mm)

Be sure to use the carrier sheet for documents in the following conditions:

- Considerably damaged documents
- Badly creased documents

(1) Insert the ribs on one of the anti-curling guides into the corresponding slots into the top cover, and then slide the guide forward.

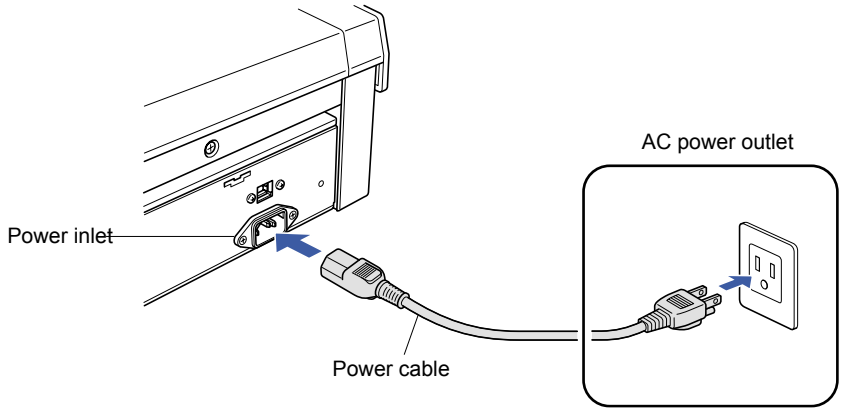


(2) Repeat the procedure for the second guide.

3. CONNECTION AND PREPARATIONS

3.1 Connecting to the Power Supply

Connect one end of the power cable provided to the scanner's power inlet and the other end to an AC power outlet of the rated supply voltage.



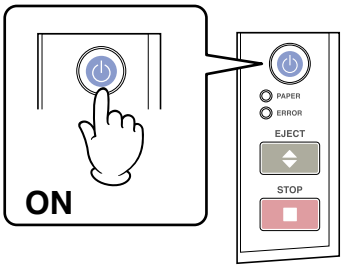
3.2 Turning the Power On and Off

The LED (blue) on the [POWER] button changes as follows to indicate the scanner's power supply status.

- Unlit: The scanner is turned off.
- Lit: Lights when the scanner is turned on and remains lit while it is operating normally.
- Flashing: Flashes when the scanner is in power-saving mode.

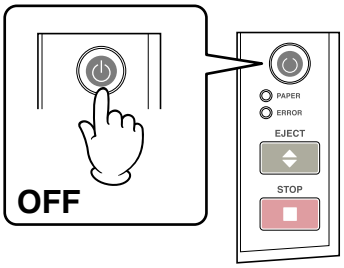
Turning the Power On

Press the [POWER] button on the scanner's control panel.
When the scanner is in the power-on status, the [POWER] button lights blue.



Turning the Power Off

Press the [POWER] button on the scanner's control panel.
When the scanner is in the power-off status, the [POWER] button LED is extinguished.

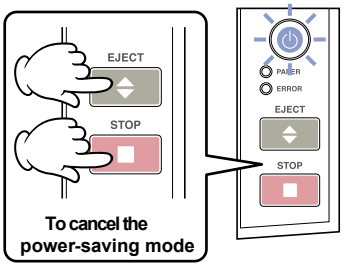


Checkpoint

After the scanner has been turned off, wait at least five seconds before turning it on again.

Notes on the power-saving mode

The scanner automatically switches to power-saving mode (the blue LED on the power button flashes) after approximately 12 minutes have elapsed without a document being loaded in the scanner. To return the scanner to normal status (Local status), press either the [STOP] or the [EJECT] key.



3.3 System Requirements

The minimum system requirements for running the scanner's hardware and software are listed below.

- Operating system: Windows 2000 Professional, XP Professional, or XP Home Edition
- CPU: Pentium III, 1 GHz
- Memory: 256 MB or more
- Monitor: 1024 x 768 pixels, True Color or higher
- Disk space: At least 10 GB*1
- Mouse
- Interface: USB 2.0 interface

**1 When the document length exceeds length of an A0-size document, additional hard disk space is required.*

Recommended environment

- CPU: Pentium 4, 2 GHz
- Memory: 1 GB or more
- Disk space: At least 30 GB
- USB 2.0 interface (that comes standard with your computer)

Checkpoint

Use with a system configuration below the recommended specifications will affect the scanning speed and prevent the scanner from operating to its specified capabilities. Moreover, colors may not be displayed correctly if the number of colors that the monitor can display is 256 or less.

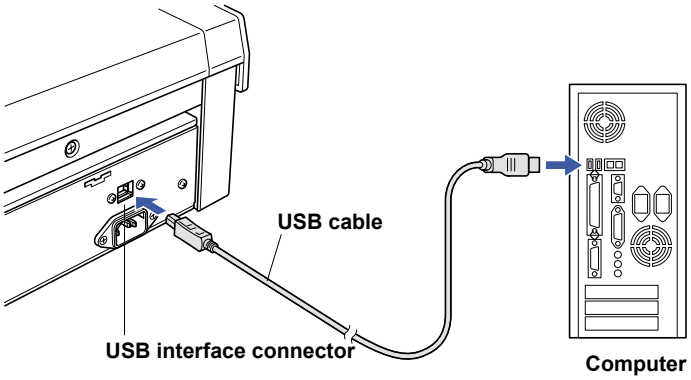
To edit an A1-size or larger grayscale document with a resolution of 400 dpi or higher, or a 24-bit color document, you may need more than the recommended memory sizes above.

3.4 Connecting the Scanner to a Computer

USB Connection

A USB cable is used to connect the scanner to the computer, via the respective USB interface connectors. The connectors at the computer and scanner ends of the USB cable have different shapes. Make sure that the cable is oriented correctly before making the connection.

Make sure that both the scanner and the computer are in the power-off status when connecting them.



Important

- Make sure that the USB cable is firmly inserted into the interface connectors.
- The operation of the scanner cannot be guaranteed in the following cases:
  - ♦ When the cable is connected to a USB hub or an add-on USB board.
  - ♦ When you are using a custom-built computer or one that you have modified.
- Do not perform any of the following actions:
  - ♦ Remove or reinsert the cable while you are installing the driver.
  - ♦ Remove or reinsert the cable while starting up the computer or the scanner.
  - ♦ Remove or reinsert the cable while transferring data.
  - ♦ Connect two or more scanners to a single computer.

Checkpoint

Please see the separate “Quick Start Guide” for the scanner driver installation procedure.

4. INSTALLING THE SOFTWARE

Checkpoint

The procedure outlined below is based on the requirement that you are logged on to Windows with administrator rights. Consult your Windows 2000 or Windows XP manual for more information.

4.1 Installing the Driver Software for Windows XP

(1) Use the USB cable to connect the scanner to the computer, and then turn on the computer.

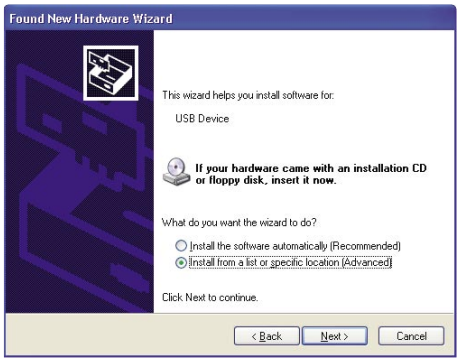
(2) When Windows starts up, insert the CD-ROM supplied with the scanner into the CD-ROM drive. The "Start" screen opens automatically. Click the [Quit] button to close the "Start" screen.

(3) Turn on the power to the scanner.

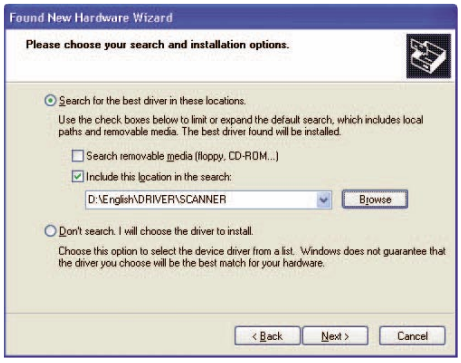
(4) When Windows XP starts up, the following screen appears (if Service Pack 2 has not been installed, the screen shown in (5) below appears). Select the option "No, not this time" and then click [Next].

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

(5) If Service Pack 2 has not been installed, the following screen appears. Select the option "Install from a list or a specific location (Advanced)." and then click [Next].


Found New Hardware Wizard
This wizard helps you install software for:
USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

(6) The screen shown below is displayed. Select the option "Search for the best driver in these locations" and select the check box entitled "Include this location in the search."
Click [Browse] and select the [English]-[DRIVER]-[SCANNER] folders in the CD-ROM drive or enter a CD-ROM drive name and \English\DRIVER\SCANNER using the keyboard.
Example: For drive D, enter "D:\English\DRIVER\SCANNER".


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\English\DRIVER\SCANNER
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

(7) Click [Next]. The wizard will start searching for the driver.

(8) The screen shown below is displayed. Read the explanation and make sure that you understand the contents.
To continue the installation, click [Continue Anyway].

Hardware Installation
The software you are installing for this hardware:
Graphtec SK200-09
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

(9) The screen shown below is displayed when the wizard has finished installing the driver.
Click the [Finish] button to close the “Welcome to the Found New Hardware” wizard.

(10) The Windows XP desktop appears, and the scanner is recognized by the computer.

4.2 Installing the Driver Software for Windows 2000

(1) Use the USB cable to connect the scanner to the computer, and then turn on the computer.

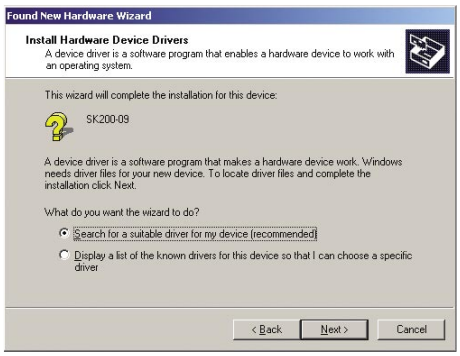
(2) When Windows starts up, insert the CD-ROM supplied with the scanner into the CD-ROM drive. The "Start" screen opens automatically. Click the [Quit] button to close the "Start" screen.

(3) Turn on the power to the scanner.

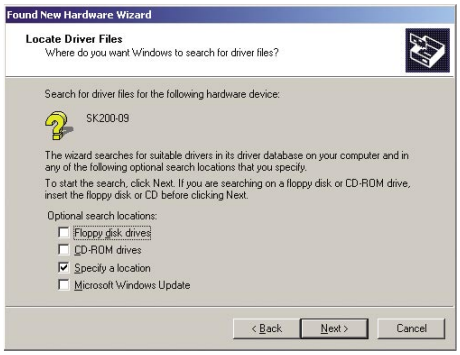
(4) The screen shown below appears. Click [Next] to move to the "Install Hardware Device Drivers" screen.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

(5) When this screen is displayed, select the option "Search for a suitable driver for my device (recommended)" and then click [Next] to display the "Locate Driver Files" screen.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
SK200-09
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

(6) When this screen is displayed, select the check box entitled "Specify a location" and click [Next].

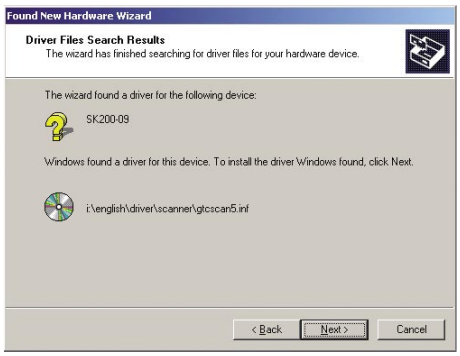

Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
SK200-09
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

(7) The following screen is displayed. Click [Browse] and select the [English]-[DRIVER]- [SCANNER] folders in the CD-ROM drive or enter a CD-ROM drive name and \English\DRIVER\SCANNER using the keyboard.

Example: For drive D, enter "D:\English\DRIVER\SCANNER".

Click [OK]. The wizard will start searching for the driver.

((8) The screen shown below is displayed when the wizard has finished searching. Click [Next].


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
SK200-09
Windows found a driver for this device. To install the driver Windows found, click Next.
i:\english\driver\scanner\gtcscan5.inf
< Back
Next >
Cancel

(9) The screen shown below is displayed. Read the explanation and make sure that you understand the contents.
To continue the installation, click [Yes].

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Graphtec SK200-09
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

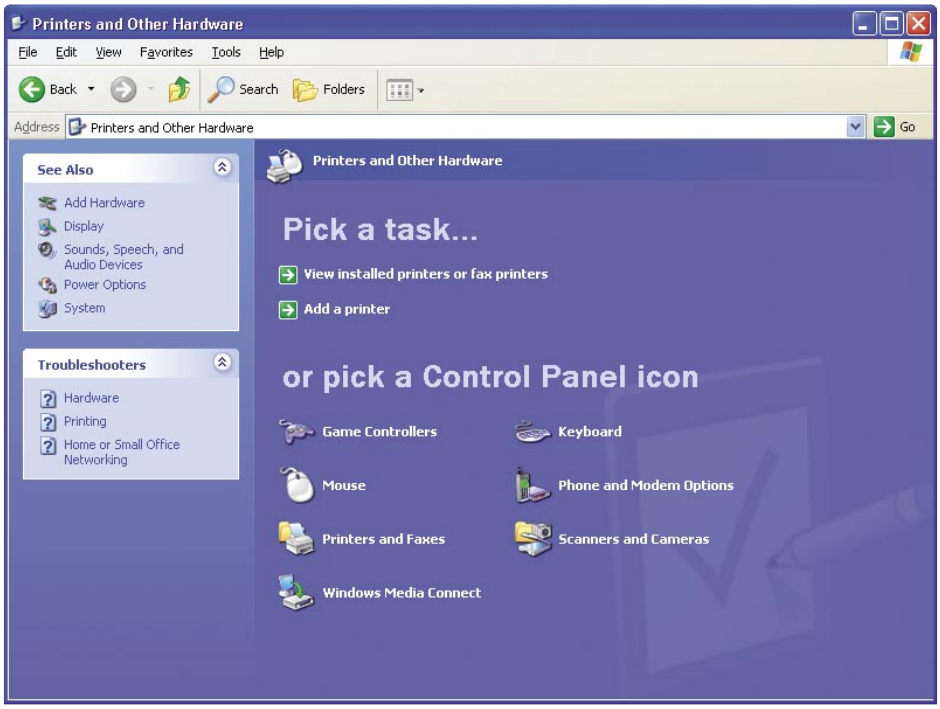
(10) The screen shown below is displayed when the wizard has finished installing the driver.
Click the [Finish] button.

(11) The Windows 2000 desktop appears, and the scanner is recognized by the computer.

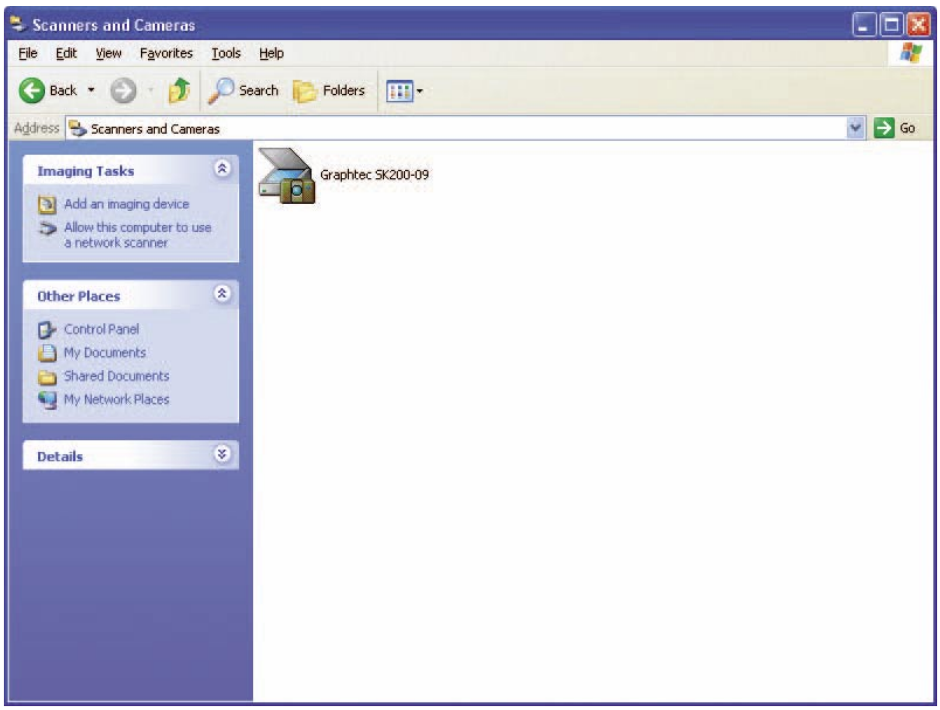
4.3 Checking the Interface Connection for Windows XP

(1) Launch the Control Panel using the [Start] menu on the Windows desktop.

(2) The screen shown below is displayed when you click on the “Printers and Other Hardware” icon.

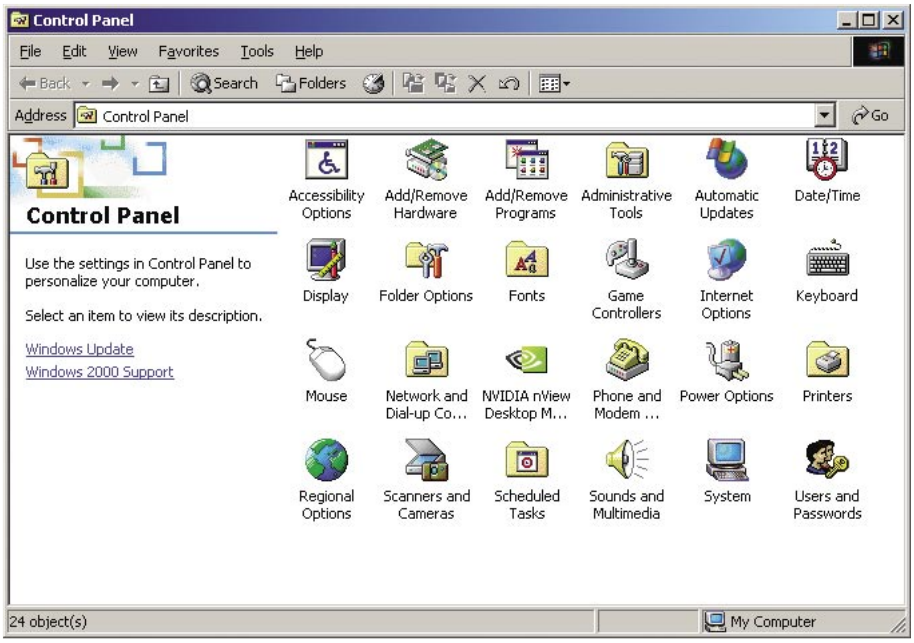


(3) The screen shown below is displayed when you click on the “Scanners and Cameras” icon.

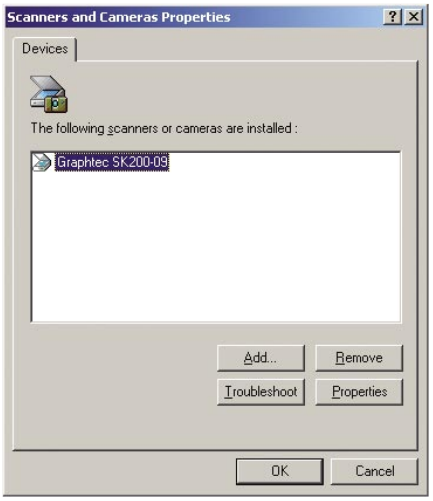


4.4 Checking the Interface Connection for Windows 2000

(1) Launch the Control Panel using the [Start] menu on the Windows desktop.



(2) The screen shown below is displayed when you click on the “Scanners and Cameras” icon.



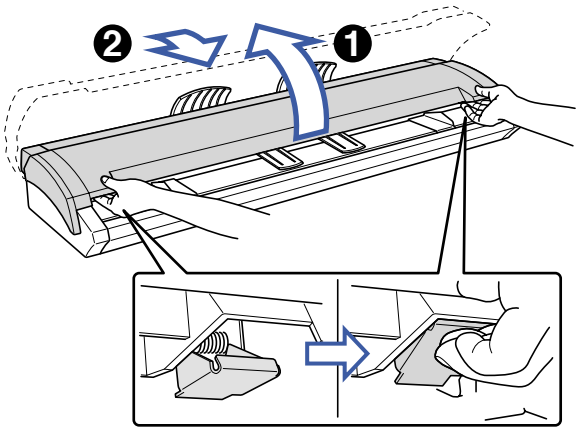
Check that “Graphtec SK200-09” is displayed here.

5. DAILY MAINTENANCE

5.1 Opening and Closing the Top Cover

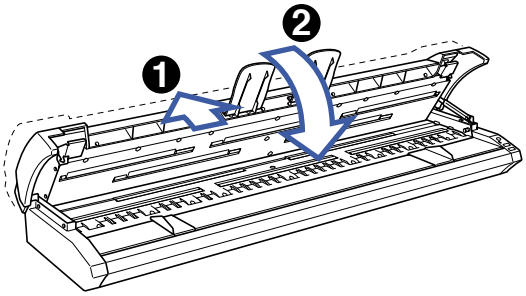
Opening the top cover

(1) Turn off the scanner.
(2) Push the left and right open levers on the top cover in the upward direction to unlock them, and then open the cover fully (approximately 60 degrees).
(3) When the cover is fully open, lower it slightly to engage the top cover fixing stay that holds the top cover in place.



Closing the top cover

(1) Raise the top cover slightly from its open status to disengage the top cover fixing stay, and then close the cover gently.
(2) Check that the left and right levers on the top cover are locked.

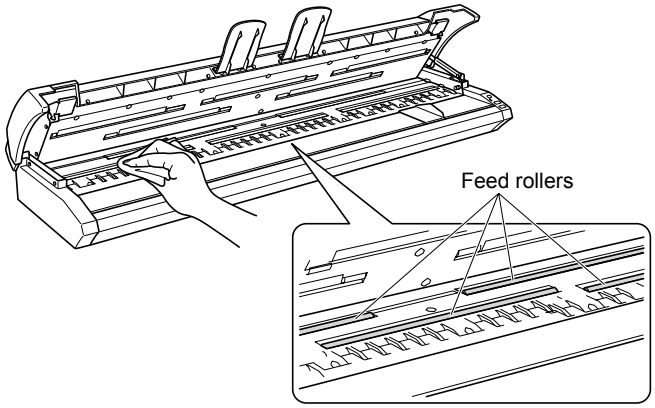


⚠Caution

Take care not to get your fingers caught when opening or closing the cover.

5.2 Cleaning the Feed Rollers

(1) Turn off the scanner.
(2) Open the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.
(3) While rotating the feed rollers, wipe them clean using a soft cloth that has been moistened with water or a neutral detergent (diluted with water) and firmly wrung out.



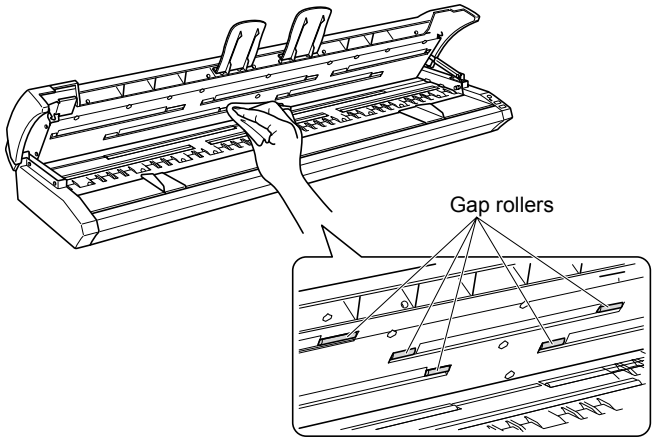
(4) Wipe the feed rollers once again using a soft, dry cloth to remove all the moisture.
(5) Close the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.

⚠Caution

- Take care not to get your fingers caught in the top cover.
- Scanning may be affected if the document hold-down unit becomes scratched or dirty.

5.3 Cleaning the Gap Rollers

(1) Turn off the scanner.
(2) Open the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.
(3) While rotating the gap rollers, wipe them clean using a soft cloth that has been moistened with water or a neutral detergent (diluted with water) and firmly wrung out.



(4) Wipe the gap rollers once again using a soft, dry cloth to remove all the moisture.
(5) Close the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.

⚠Caution

- Take care not to get your fingers caught in the top cover.
- Scanning may be affected if the document hold-down unit becomes scratched or dirty.

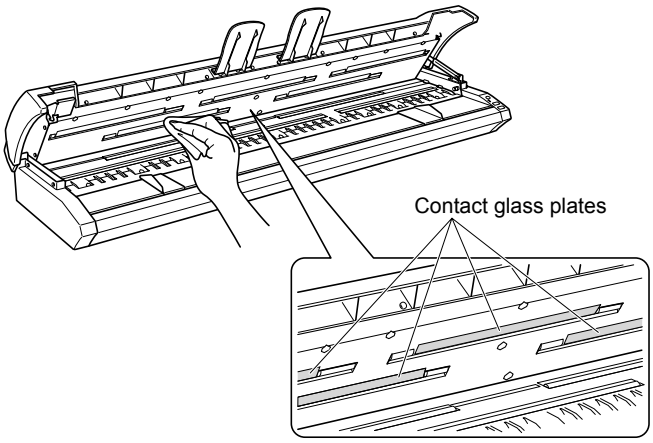
5.4 Cleaning the Image Sensors (Contact glass plates)

The scanner's image quality drops when the contact glass plates over the image sensors become dirty, so clean the image sensors whenever necessary.

(1) Turn off the scanner.

(2) Open the top cover as described in Section 5.1, "Opening and Closing the Top Cover".

(3) As shown below, wipe off any soiled areas on the contact glass plates using a soft cloth that has been moistened with water or a neutral detergent (diluted with water) and firmly wrung out.



(4) Wipe the contact glass plates once again using a soft, dry cloth to remove all the moisture.

(5) Close the top cover as described in Section 5.1, "Opening and Closing the Top Cover".

⚠Caution

- Take care not to get your fingers caught in the cover.
- Do not use a commercial cleaner for office equipment, a glass cleaner, or chemical solvents such as solutions containing alcohol. Moreover, although the contact glass plates is not a maintenance part that requires periodic replacement, it is a consumable part because its surface may receive slight scratches due to minute particles of dust and other foreign matter. If document scanning produces unsatisfactory results (unexpected white or black streaks in the data) due to scratches on one or more of the contact glass plates or other reasons, please perform the calibration procedure (see Section 5.7, "Scanner Calibration"). If the scanning results do not improve after calibration, the contact glass plate(s) will need to be replaced.

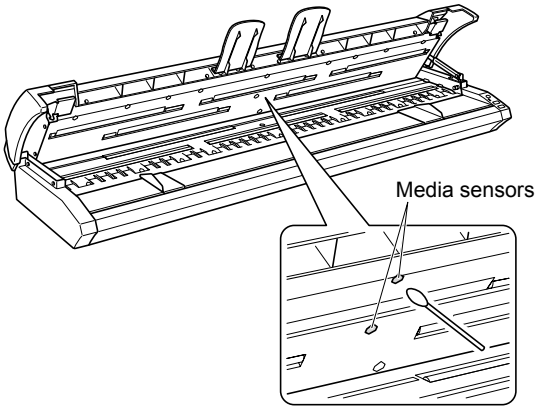
5.5 Cleaning the Media sensors

Accumulated dust on the media sensors may prevent the document from being detected. The sensors must be cleaned when necessary.

(1) Turn off the scanner.

(2) Open the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.

(3) Wipe the media sensors (at the front and rear) using a cotton swab.



(4) Close the top cover as described in Section 5.1 “Opening and Closing the Top Cover”.

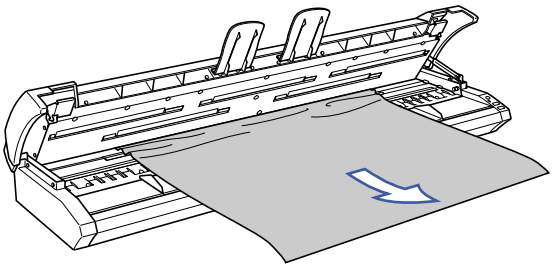
⚠Caution

- Take care not to get your fingers caught in the top cover.
- Use a cotton swab or something equally soft to gently wipe the media sensors.
  Do not use any chemicals to clean the sensors.

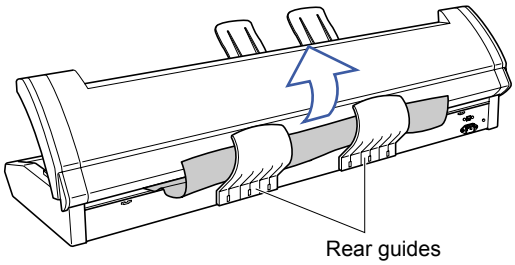
5.6 Removing a Jammed Document

If a document becomes jammed in the scanner during scanning or another operation, follow the procedure described below to remove the jammed document.

(1) Turn off the scanner.
(2) Open the top cover as described in Section 5.1 “Opening and Closing the Top Cover”.
(3) If the document is jammed at the front, remove the document from the inside by pulling it forward.



(4) If the document is jammed at the rear, remove the document by pulling it out along the rear guides.



(5) Close the top cover as described in Section 5.1, “Opening and Closing the Top Cover”.

⚠Caution

- Take care not to get your fingers caught in the top cover.
- When removing a jammed document, pull on it gently to prevent damage to the document.

5.7 Scanner Calibration

Calibrate the scanner if scanning quality is observed to deteriorate, with scanned results such as those described below

- The scanned image is distorted
- Areas of uneven color appear in the scanned image
- Other unsatisfactory results (but excluding problems related to media quality, such as folds, creases, or paper curl)

Preparation and checks

Recommended usage environment

- Monitor: 1024 x 768 pixels, High Color or better resolution

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Checkpoint

A low-resolution monitor will make it difficult to discern any problem areas.

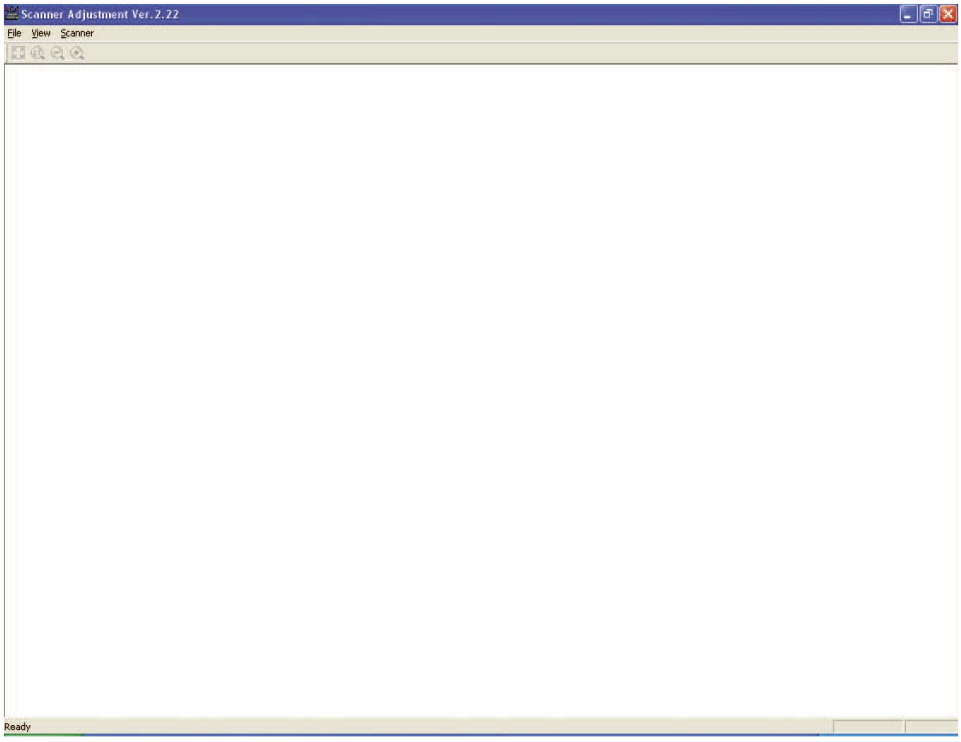
Launching the Scanner Adjustment Program from Scanning Arts SP

(1) Connect the scanner to the computer, turn on the scanner, and then turn on the computer.

(2) Install the Scanning Arts SP software if it is not already installed.

(3) Click the [Start] button on the Windows desktop, then select Programs > Scanning Arts SP > Scanner Adjustment.

(4) Click Scanner Adjustment to launch the Scanner Adjustment program.



(5) Select the desired adjustment item from the Scanner menu.

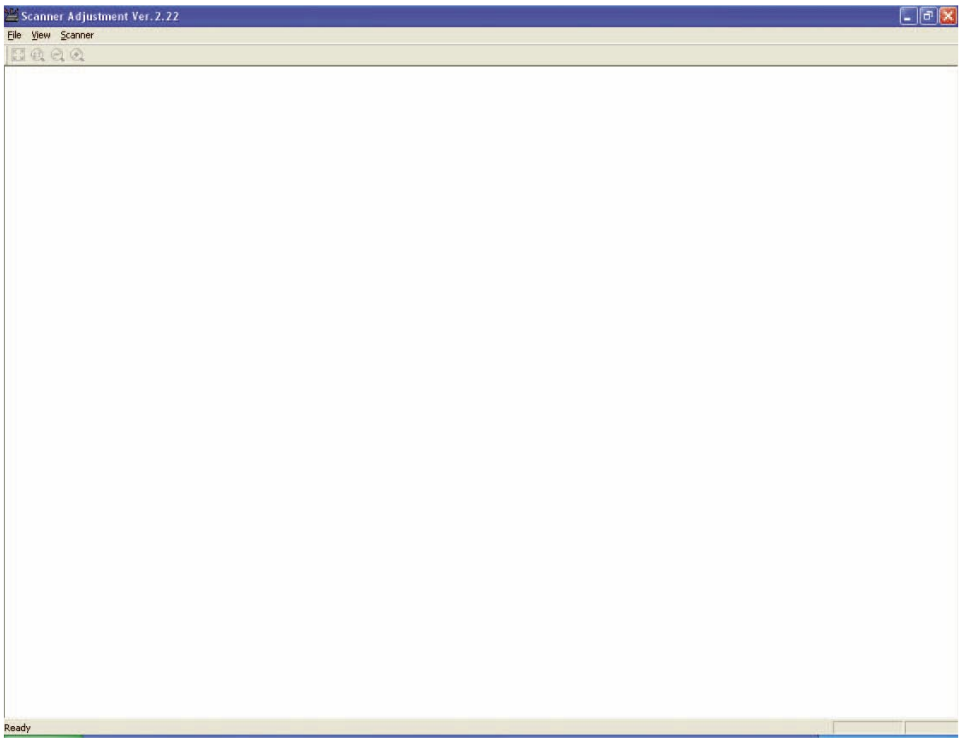
Launching the Scanner Adjustment Program from the TWAIN driver

(1) Connect the scanner to the computer, turn on the scanner, and then turn on the computer.

(2) Install the TWAIN driver if it is not already installed.

(3) Select “Adjust” > “Scanner Adjustment” from the TWAIN driver’s “Settings” tab. (The location of the "Adjust" depends on the application software.)

(4) Click Scanner Adjustment to launch the Scanner Adjustment program.



(5) Select the desired adjustment item from the Scanner menu.

Calibration

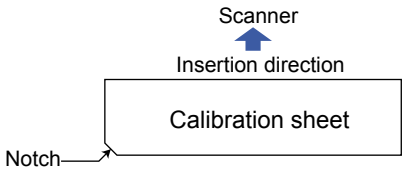
Before beginning calibration, clean the contact glass plates located inside the scanner and the surface of the document-scanning table. Any dust or dirt on these surfaces may affect the calibration results and the resulting image quality.
Check that the calibration sheet is free of any dust or dirt.

⚠Caution

- The calibration procedure will take some time. Do not turn off the scanner while calibration is underway. Accidentally turning off the scanner may result in damage that requires servicing.
- Handle the calibration sheet with care so that it does not get bent. To prevent soiling, store it in its special storage box.
- The calibration sheet is a consumable item. It cannot be used if it is bent or soiled.
- The calibration sheet is a paper product. Do not attempt to clean it with any type of liquid cleaner.

Checkpoint

A prompt instructing you to insert the calibration sheet in the scanner will be displayed in Step 3. At that time, insert the calibration sheet as instructed, with the notch at the bottom left, as shown in the diagram below.

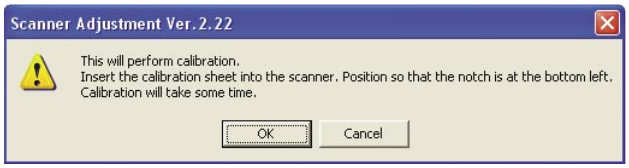


(1) Launch the Scanner Adjustment program (as described earlier), and then display the Scanner menu.

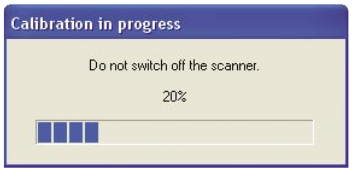
Select Calibration on the Scanner menu.

(2) Select All in Calibration and click the [Execute] button.

(3) The following prompt is displayed. Insert the calibration sheet into the scanner as instructed.


Scanner Adjustment Ver.2.22
This will perform calibration.
Insert the calibration sheet into the scanner. Position so that the notch is at the bottom left.
Calibration will take some time.
OK
Cancel

(4) Click the [OK] button to begin calibration.

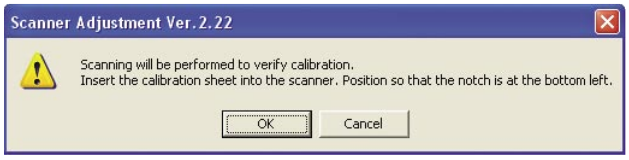


(5) Calibration ends after approximately 10 minutes.

Click the [OK] button to complete calibration.

(6) To check the calibration results, click the [Confirm] button in the Calibration screen (shown in step (2) above).

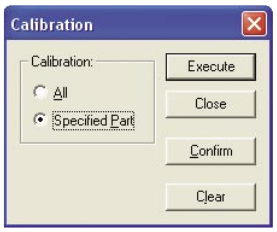
(7) The following prompt is displayed. Insert the calibration sheet into the scanner once again as instructed.


Scanner Adjustment Ver.2.22
Scanning will be performed to verify calibration.
Insert the calibration sheet into the scanner. Position so that the notch is at the bottom left.
OK
Cancel

(8) Click the [OK] button to start scanning.
The scanned data is displayed when scanning is complete. Colors may differ slightly for individual sensors to make it easier to identify problem areas in calibration. This does not indicate a defect.
Check that there are no vertical streaks, such as white patches, in the scanned data.
(Streaks occur when calibration is not performed correctly due to contamination by dust or dirt.)

(9) If the data is normal, calibration is complete. Click the [Close] button and exit the Scanner Adjustment Program.

(10) If any abnormal data is observed, specify the problem areas as follows:
Select Calibration from the Scanner menu, and then select Specified Part in the Calibration screen.



(11) The mouse arrow cursor changes to a cross cursor when moved over the data. Click the left mouse button with the mouse positioned over the streak data. The selected area is shown in blue. Repeat this procedure for any additional streaks.
Areas that have been selected (shown in blue) can be deselected by clicking the left mouse button again. To deselect all selected areas, click the [Clear] button.

(12) Once all the required areas have been specified, remove the calibration sheet and clean the contact glass plates and document-scanning table surface. Check the calibration sheet for dust and dirt.

(13) Click the [Execute] button and then follow the instructions displayed on the screen. The procedure will be the same as that described in Steps (3) to (5) above. (The time required for calibration will vary according to the number of repeats specified.)

(14) Perform Steps (8) to (10) once more, and verify the calibration results.

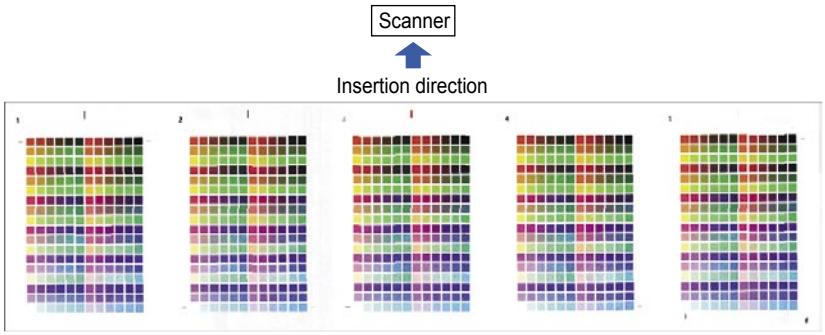
Color Correction

Perform color correction if there is any discrepancy in color in parts of the scanned image even after you have calibrated the scanner.

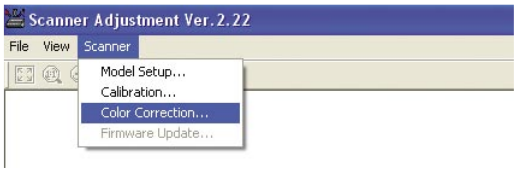
⚠Caution

- Handle the color correction sheet with care so that it is does not get soiled, bent or scratched. A soiled, bent, or scratched sheet will not give good results.
- The color correction sheet is a consumable item. It cannot be used if it is bent or soiled.
- The color correction sheet is a paper product. Do not attempt to clean it with any type of liquid cleaner.

Color correction sheet



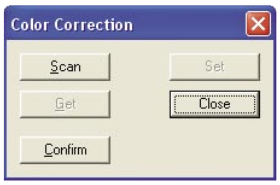
(1) Display the Scanner menu.



Select Color Correction.

(2) Click the Scan button.

(3) The following screen is displayed. Click the [Scan] button.



(3) The following prompt is displayed. Insert the color correction sheet into the scanner as instructed.

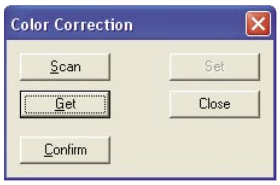
Scanner Adjustment Ver.2.22
Scanning will be performed to correct the colors.
Insert the color correction sheet into the scanner. Please load the sheet in the center of the scanner, making sure that the numbers are at the top.
OK
Cancel

Checkpoint

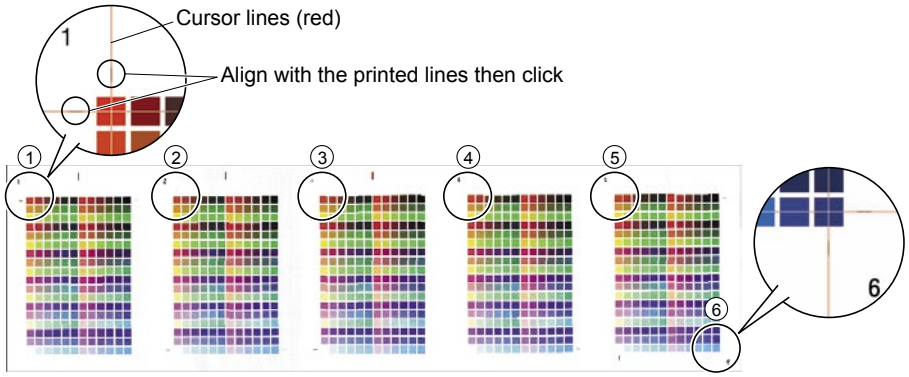
Position the color correction sheet so that the red bar in the center of the sheet is centered in the scanner.

(4) Click the [OK] button to start scanning.
The scanned data is displayed when scanning is complete. Colors may differ slightly for individual sensors, but this does not indicate a defect.

(5) When the data is displayed, click the [Get] button.



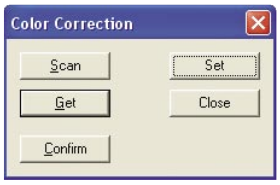
(6) Click in the center of the color tiles indicated by the numbers 1 to 6 on the color correction sheet, in ascending order. For numbers 1 to 5, click in the center of the upper left tile; for number 6, click in the center of the bottom right tile. Align the cursor crosshairs with the printed reference lines beside each of the indicated tiles.



Checkpoint

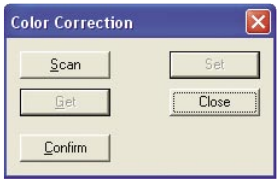
- The next reference point to be checked is displayed on the Status bar.
- If you click in error, click the Esc. key to cancel the operation and return to the immediately previous step.
- If you click on the wrong tile, color correction will not be performed correctly and the colors of the image displayed after color correction will be incorrect.

(7) Click the [Set] button to perform color correction.

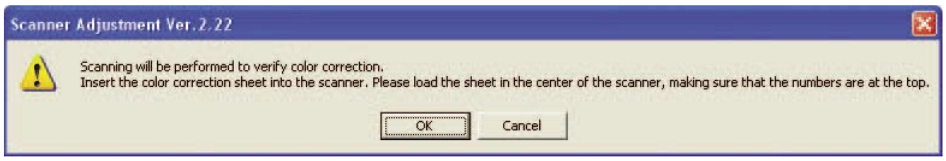


(8) When color correction has been completed, click the [OK] button.

(9) To check the color correction results, select Color Correction from the Scanner menu, and then click the [Confirm] button in the Color Correction screen.



(10) The following prompt is displayed. Insert the color correction sheet into the scanner as instructed.


Scanner Adjustment Ver.2.22
Scanning will be performed to verify color correction.
Insert the color correction sheet into the scanner. Please load the sheet in the center of the scanner, making sure that the numbers are at the top.
OK
Cancel

Checkpoint

Position the color correction sheet so that the red bar in the center of the sheet is centered in the scanner (but with the printed side down).

(11) Click the [OK] button to start scanning.
After scanning has been completed, an enlarged view of the color-corrected data is displayed.

(12) Click the Fit icon to display the entire image, and check whether there is any discrepancy in color. If there is no discrepancy, color correction is complete. Click the [Close] button.

Checkpoint

If there is still some color discrepancy after performing Color Correction:
• Repeat the Color Correction procedure.
• Perform the Calibration procedure, and then repeat the Color Correction procedure.
If you perform the color correction procedure several times with no discernible results, there may be a problem with the scanner itself. In this case, please contact the store where you purchased your scanner or your nearest Graphtec representative.

6. RECOMMENDED PARTS LIST

No.	Part No.	Part Name	Description	Q'ty	Remarks
1	774061500	Main Board	Data Controller Board	1	SK200-09
	794050710	Main Board, SVC_SK_Main_A5	Including sub-board	1	SK200-09-A
2	774060261	CIS Controller Board		5	SK200-09
	794050713	CIS Controller Board, SVC_CIS_A5		5	SK200-09-A
3	774060263	CIS Power Board		1	SK200-09
	794050714	CIS Power Board, SVC_Power_A5		1	SK200-09-A
4	500051901	Switching Power Supply Board	BWC24SX-U-E	1	
5	774061267	Control Panel Board		1	
6	774061226	Control Panel Relay Board		1	
7	774061268	USB Relay Board		1	
8	301504001	Flap Stay, L-140S		1	
9	649202210	Calibration Sheet (36 Shade RMD)	White Calibration+Color Correction Sheet	1	
10	649200125	Feed Roller 1	Front Feed Roller	1	
11	649200135	Feed Roller 2	Rear Feed Roller	1	
12	378014221	Belt, Feed Roller Drive	60S2M284	1	
13	378012591	Belt, Motor Drive	60S2M250	1	
14	311012820	Bearing	MF128ZZMC3PS2S	8	For feed roller
15	310010620	Bearing	MR106ZZMC3PS2S	2	For middle pulley
16	305704002	Right Side Damper	FYN-N1-R303	1	Same as CS600
17	305704003	Left Side Damper	FYN-N1-L303	1	Same as CS600
18	380111241	Spring, Drive Roller Pressure L1, L2 /R1, R2	AP110-024-0.9	4	
19	380111251	Spring, Drive Roller Pressure L3, R3	AP110-025-1.0	2	
20	380111201	Spring, Drive Roller Pressure Center	AP110-025-1.2	2	
21	774060203	Pulley Assy		2	For feed roller
22	500052691	Motor	KT60LM06-551	1	
23	641300171	Motor Pulley	Pulley, 22Z	1	
24	694450111	CIS Flexible Cable 50 mm	FPC, CS20A	3	
25	694600320	CIS Flexible Cable 100 mm	FPC460032	2	
26	500052659	Media Sensor	PS117ND1	2	
27	500052694	Cover Sensor	LG217L-3	1	
28	774061940	Contact Glass Plate Front Assy		3	
29	774061941	Contact Glass Plate Rear Assy		2	
30	774061952	CIS Sensor Front Unit Assy (Rank C)	Includes the Contact Glass plate Assy (Select the same rank of sensor that is used in your scanner.)	3	
	774061953	CIS Sensor Front Unit Assy (Rank D)			
	774061956	CIS Sensor Front Unit Assy (Rank G)			
	774061957	CIS Sensor Front Unit Assy (Rank H)			
31	774061972	CIS Sensor Rear Unit Assy (Rank C)		2	
	774061973	CIS Sensor Rear Unit Assy (Rank D)			
	774061976	CIS Sensor Rear Unit Assy (Rank G)			
	774061977	CIS Sensor Rear Unit Assy (Rank H)			
32	649201810	GAP Roller 9		2	
33	649201154	GAP Roller 29		8	
34	649200832	Lock Lever, Right		1	
35	649200850	Spring, Rock Lever Right		1	
36	649200842	Lock Lever, Left		1	
37	649200860	Spring, Rock Lever Left		1	
38	309011003	Bearing, Pressure Arm	10SRF41Z	8	
39	641700770	Key Top, Power		1	
40	641700760	Key Top F/R		1	

7. LIST OF JIGS AND TOOLS

7.1 Jigs

Jigs	Adjustments	Remarks
SK200-09 firmware	•Downloading system program	Firmware (SK200SP.X)
Scanning Master 21+ (Ver. 6.40 or later)	•Downloading system program •Shading (white correction) •Adjusting feed distance •Aligning sensor images •Adjusting offset •Color correction	Software supplied with the scanner (Scanning Master 21+)
Calibration sheet	•Shading (white correction)	Standard accessory 1050 mm x 200 mm
Color correction sheet	•Color correction	Standard accessory
42-inch adjustment test chart	•Adjusting feed distance •Adjusting offset •Aligning sensor images	Record measured values between a and c, b and d, a and b, c and d, a and d, and b and c.
Shim 0.2 mm	•Roller gap adjustment (Between feed roller and contact glass plate)	
Shim 0.3 mm		
Mylar sheet #300	• Confirmation of the grip pressure	Thickness 0.075 mm

7.2 Tools

Tools	Usage	Remarks
Screwdriver Allen wrench (2 mm to 4 mm) Needle-nose pliers	Disassembly, reassembly, and other operations	Large, medium, and small flat blade screwdrivers and Phillips screwdrivers
Push/Pull gauge 5 kg	Adjusting belt tension	
Multimeter	Checking voltage level	

7.3 Other

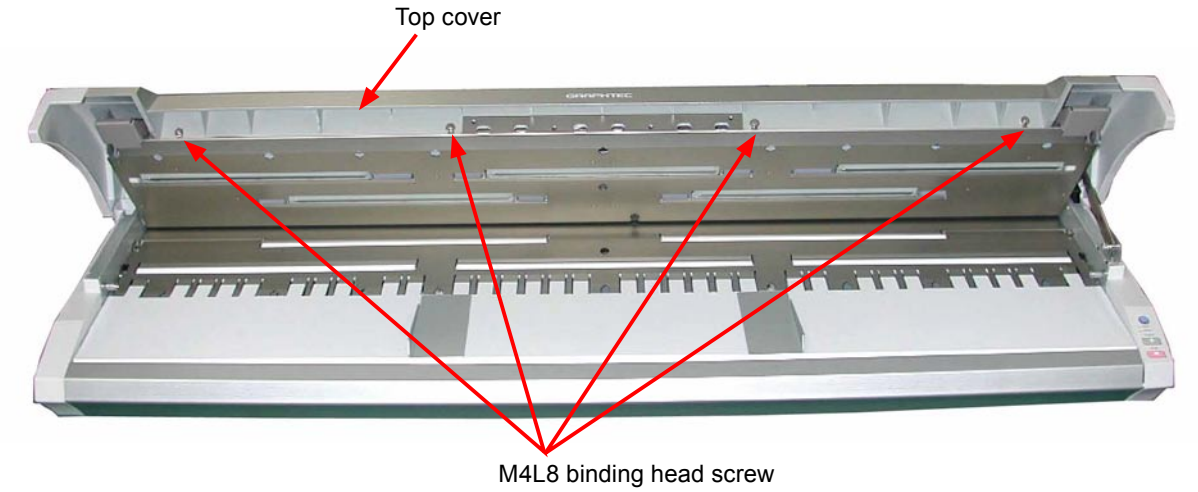
Item	Usage	Remarks
Water-diluted neutral detergent or absolute ethanol wiper (cloth)	Cleaning	
PC USB cable	Used to determine whether the problem is caused by the scanner or other equipment.	

8. DISASSEMBLING AND ADJUSTING THE MECHANICAL PARTS

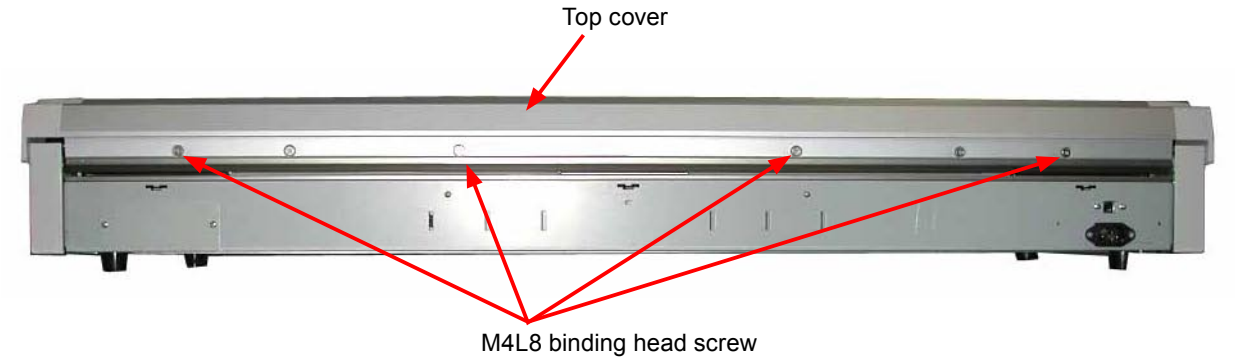
8.1 Top Cover

Detaching the top cover

(1) Remove the four M4L8 binding head screws on the front side of the top cover.



(2) Remove the four M4L8 binding head screws on the rear side of the top cover.



(3) Detach the top cover from the scanner unit in the upward direction.

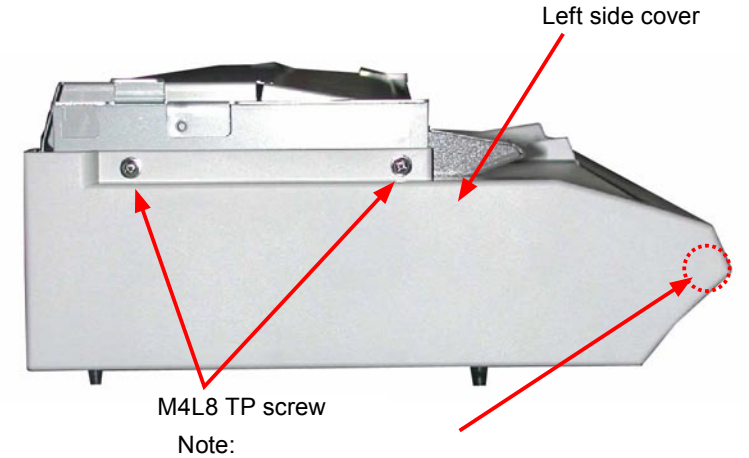
Reattaching the top cover

(1) Reattach the top cover in the reverse order in which it was detached.

8.2 Left Side Cover

Detaching the left side cover

(1) Detach the top cover (see Section 8.1).
(2) Remove the two M4L8 TP screws on the left side of the scanner unit.
(3) Detach the left side cover.



Note:
There is a positioning pillar inside the left side cover.
Do not twist the cover when removing the cover.
Otherwise, you will break the positioning pillar.

Reattaching the left side cover

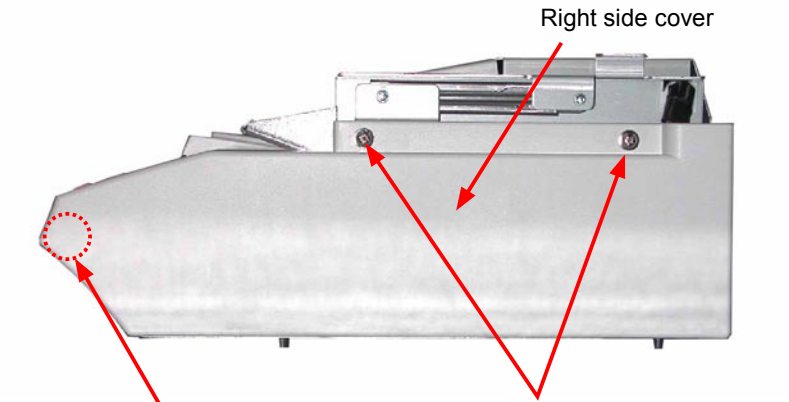
(1) Reattach the left side cover in the reverse order in which it was detached.

8.3 Right Side Cover

Detaching the right side cover

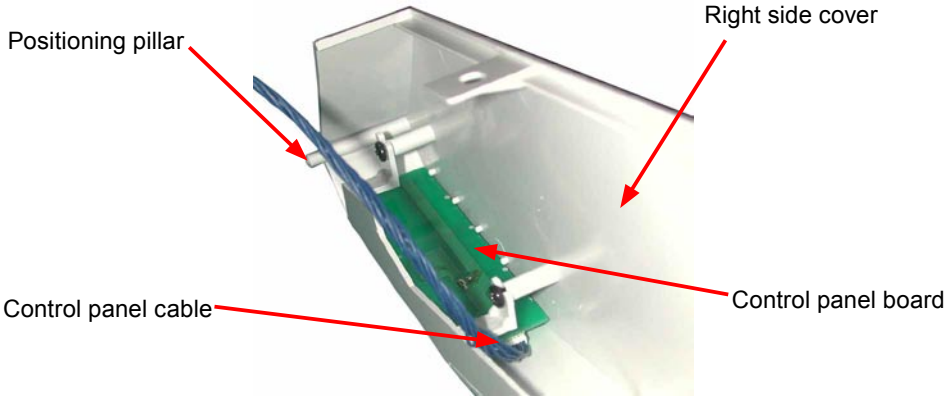
(1) Detach the top cover (see Section 8.1).

(2) Remove the two M4L8 TP screws on the right side of the scanner unit.



Note:
There is a positioning pillar inside the right side cover.
Do not twist the cover when removing the cover.
Otherwise, you will break the positioning pillar.

(2) Disconnect the control panel cable from the control panel board.



(3) Detach the right side cover.

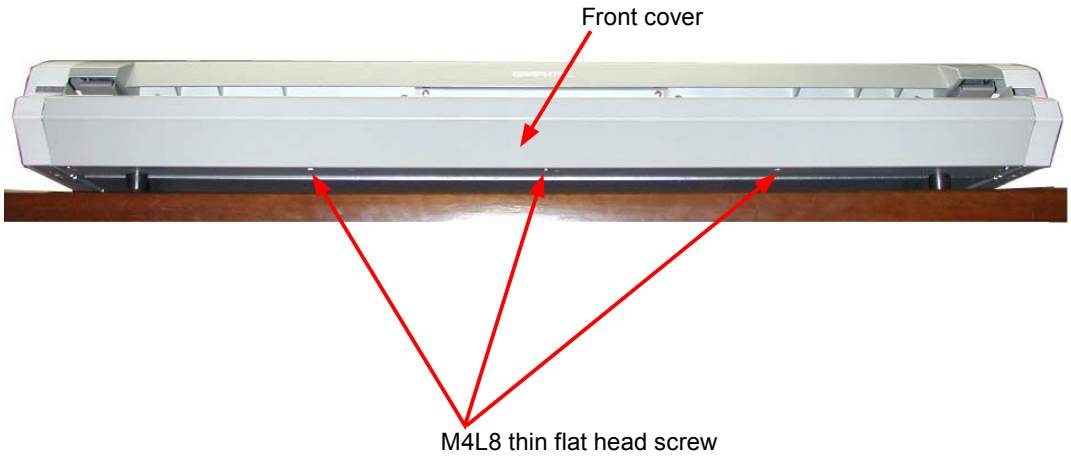
Reattaching the right side cover

(1) Reattach the right side cover in the reverse order in which it was detached.

8.4 Front Cover

Detaching the front cover

(1) Remove the three M4L8 thin flat head screws holding the front cover.



(2) Pull out the front cover from the scanner unit.

Reattaching the front cover

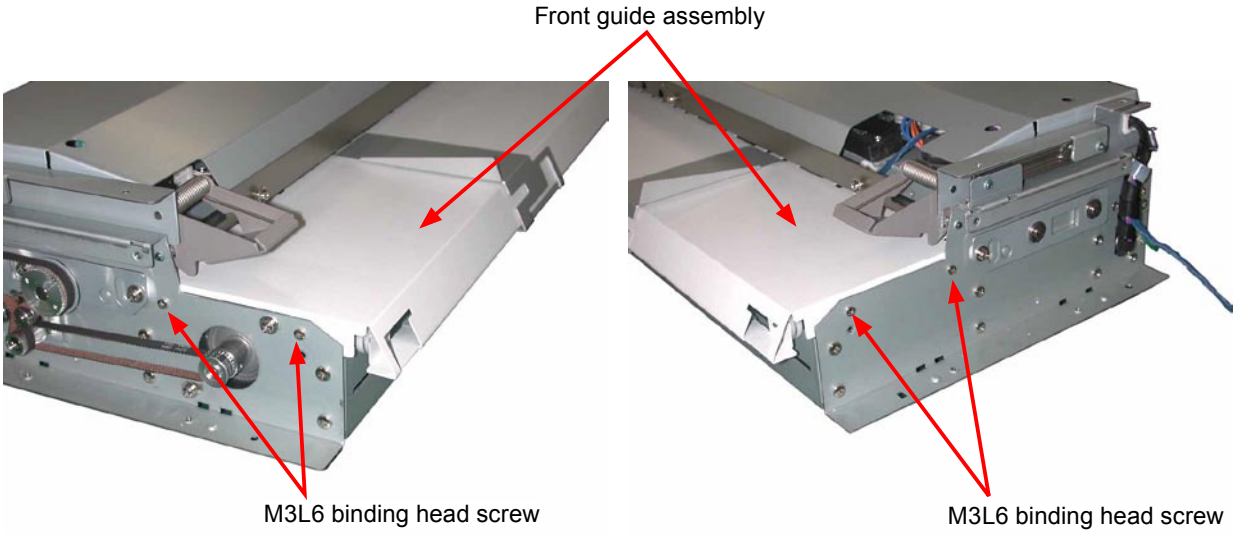
(1) Reattach the front cover in the reverse order in which it was detached.

8.5 Front Guide Assembly

Detaching the front guide assembly

(1) Detach the top, left, right side side and front covers (see Sections 8.1, 8.2, 8.3 and 8.4).

(2) Remove the two M3L6 binding head screws holding the front guide assembly from each side.



(3) Detach the front guide assembly from the scanner unit.

Reattaching the front guide assembly

(1) Reattach the front guide assembly in the reverse order in which it was detached.

Checkpoint

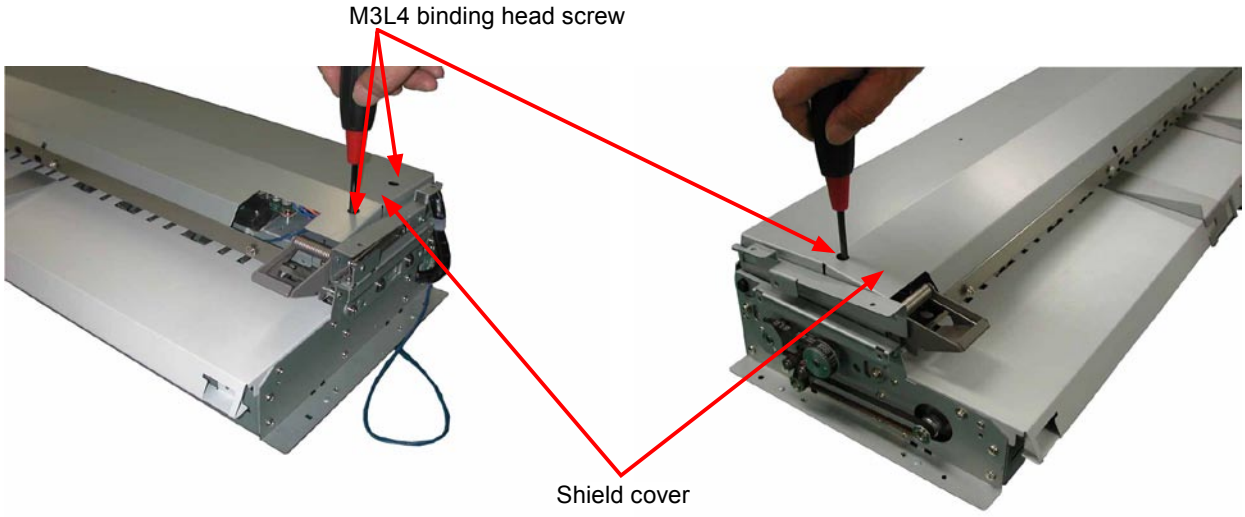
When reattaching the front guide assembly, make sure that the front guide assembly does not touch the front drive roller.

8.6 Shield Cover

Detaching the shield cover

(1) Detach the top cover (see Section 8.1).

(2) Remove the three M3L4 binding head screws from the access holes of the shield cover as shown in the photographs below.



(3) Detach the shield cover.

Reattaching the rear cover

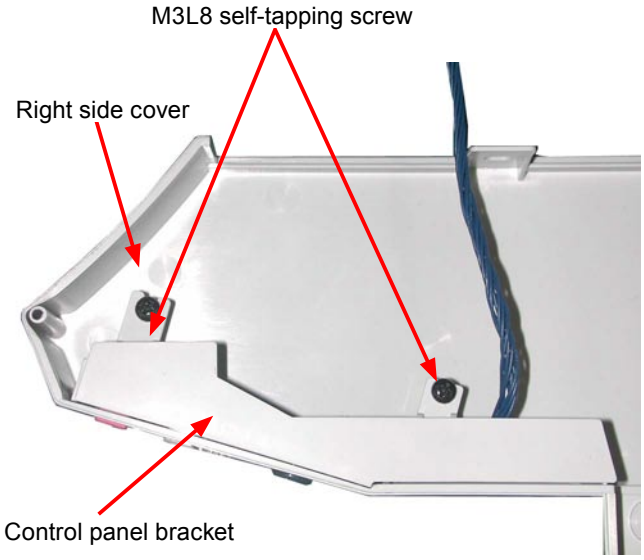
(1) Reattach the shield cover in the reverse order in which it was detached.

8.7 Control Panel

Detaching the control panel board

(1) Detach the top and right side covers (see Sections 8.1 and 8.3).

(2) Remove the two M3L8 self-tapping screws holding the control panel bracket.



(4) Disconnect the control panel cable from the control panel board.

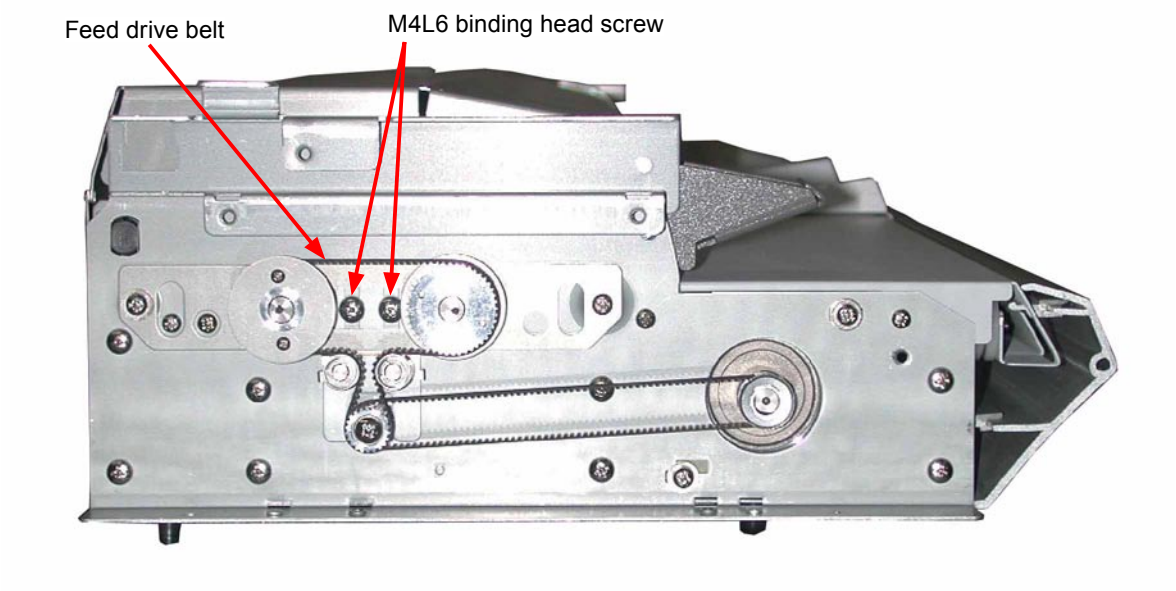
Reattaching the control panel board

(1) Reattach the control panel board in the reverse order in which it was detached.

8.8 Feed Drive Belt (60S2M250)

Detaching the feed drive belt

(1) Detach the top and left side covers (see Sections 8.1 and 8.2).
(2) Loosen the two M4L6 binding head screws holding the feed belt tension bracket.
(3) Detach the feed drive belt from the feed pulley.



Reattaching the feed drive belt

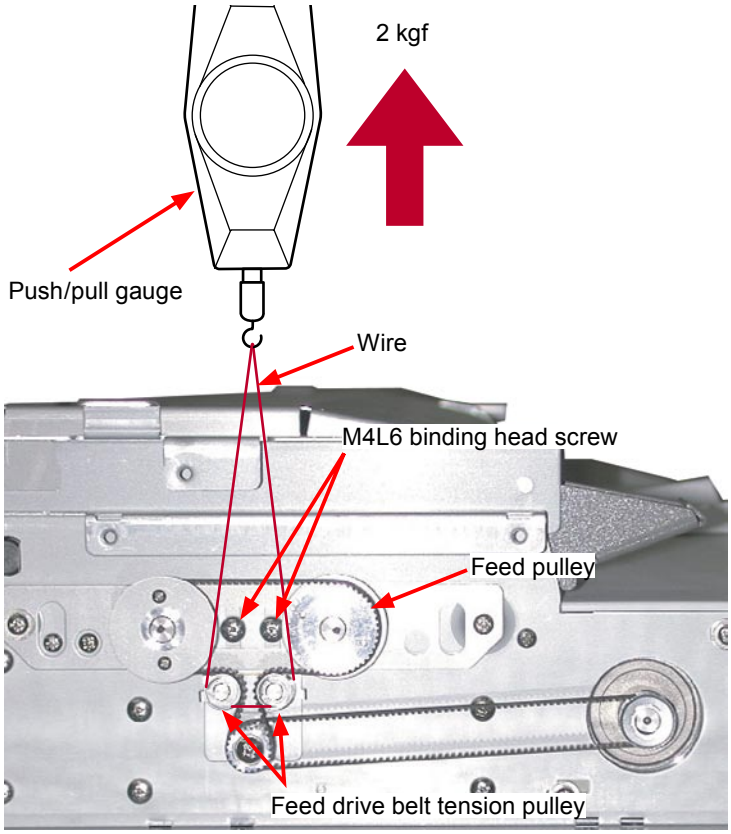
(1) Reattach the feed drive belt by reversing the sequence of steps in which it was detached.
(2) Adjust the belt tension (see Section 8.9).

8.9 Adjusting Feed Drive Belt Tension (60S2M250)

Adjusting the feed drive belt tension

(1) Loosen the two M4L6 binding head screws holding the feed drive belt tension bracket.

(2) Loop the wire around the feed pulleys as shown in the photograph below.



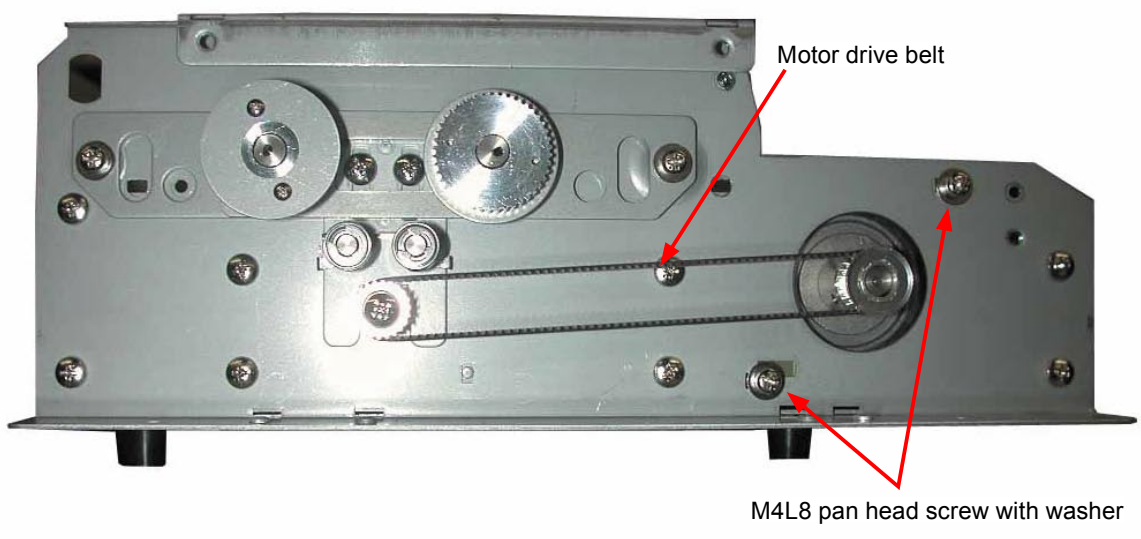
(3) Use the push/pull gauge to pull the feed drive belt tension pulleys with a 2 kg force as shown above.

(4) Tighten the two M4L6 binding head screws that hold the feed drive belt tension bracket.

8.10 Motor drive belt (60S2M284)

Detaching the motor drive belt

(1) Detach the top and left side covers (see Sections 8.1 and 8.2).
(2) Detach the feed drive belt (see Section 8.8).
(3) Loosen the two M4L8 pan head screws with washer holding the motor.
(4) Detach the motor drive belt from the pulleys.



Reattaching the motor drive belt

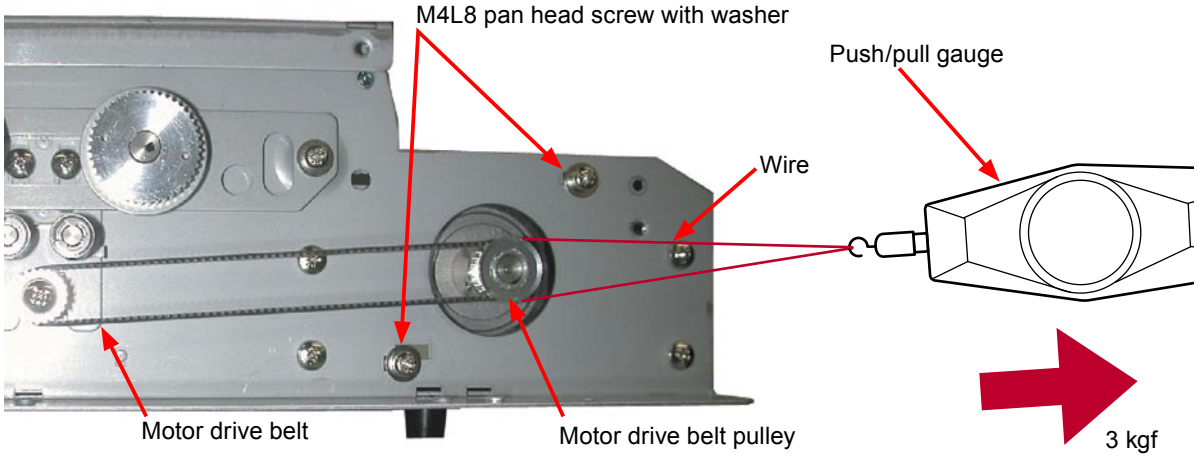
(1) Reattach the motor drive belt by reversing the sequence of steps in which it was detached.
(2) Adjust the belt tension (see Section 8.11).

8.11 Adjusting the Motor Drive Belt Tension (60S2M284)

Adjusting the motor drive belt tension

(1) Loosen the two M4L8 pan head screws with washer holding the motor.

(2) Loop the wire around the motor pulley as shown in the photograph below.



(3) Use the push/pull gauge to pull the motor pulley with a 3 kg force as shown above.

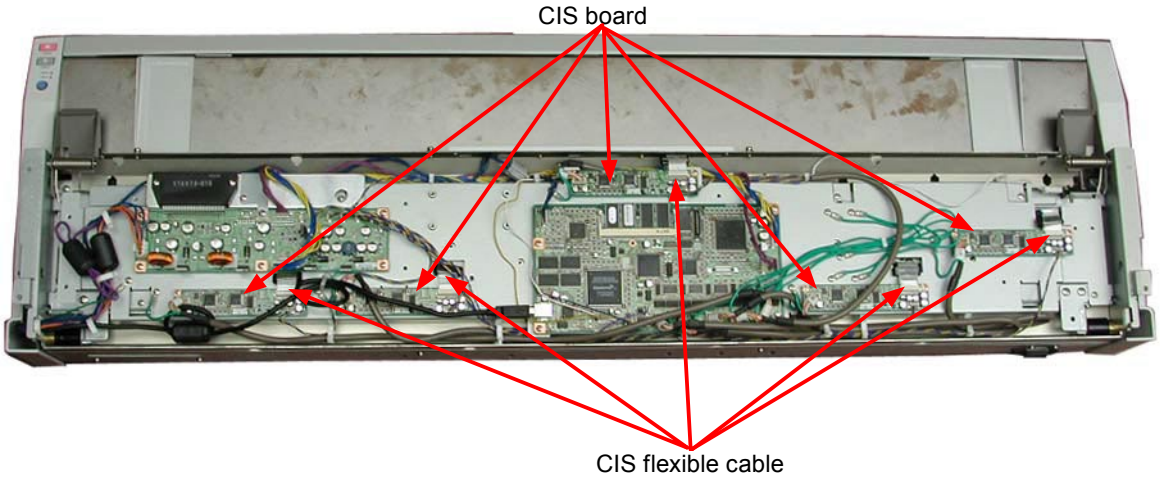
(4) Tighten the two M4L8 pan head screws with washer that hold the motor.

8.12 Board Base Chassis

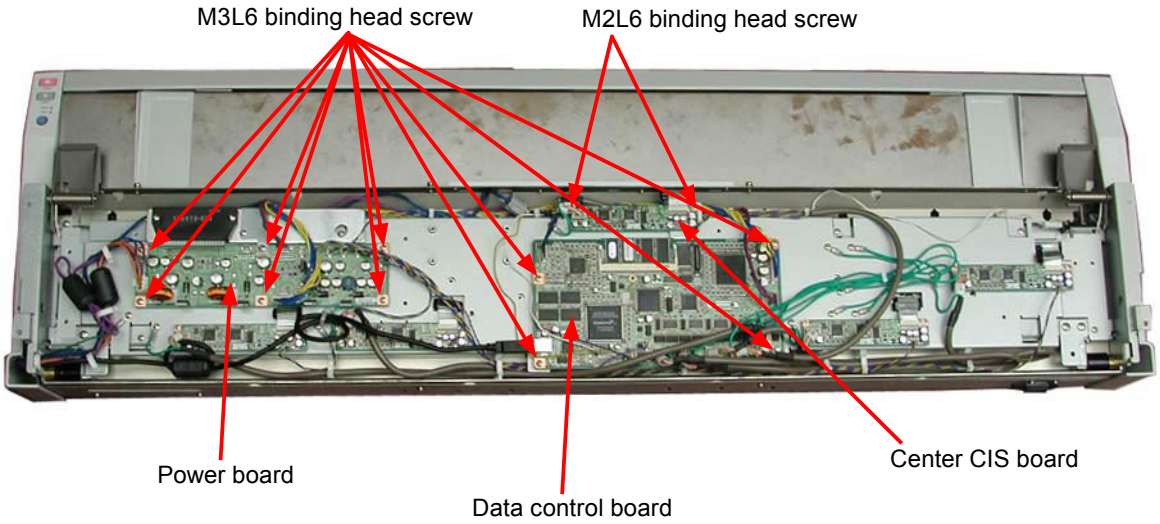
Detaching the board base chassis

(1) Detach the top and shield covers (see Sections 8.1 and 8.6).

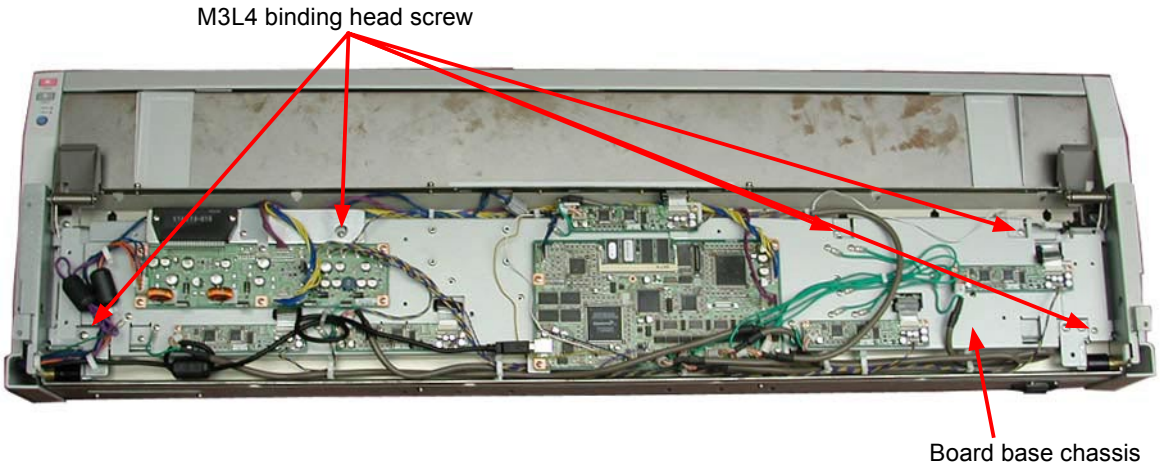
(2) Disconnect the five CIS flexible cables from the CIS boards.



(3) Remove the ten M3L6 binding head screws holding the data control board and power board.



(4) Remove the five M3L4 binding head screws holding the board base chassis.



(5) Gently lift up the front of the board base chassis, and then pull out the CIS flexible cables under the board base chassis.
Note:
There are CIS flexible cables connected to the CIS unit under the board base chassis.
Therefore, do not lift up the board base chassis forcibly.

(6) Lay the board base chassis down at the rear of the main unit as shown below.

Reattaching the board base chassis

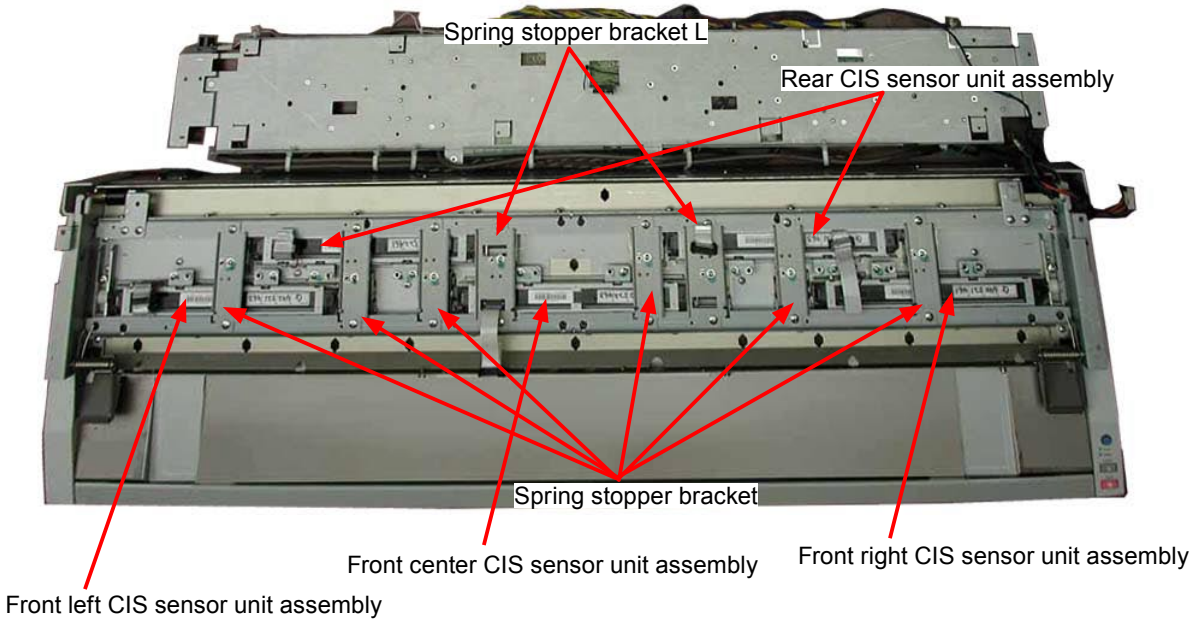
(1) Reattach the board base chassis by reversing the sequence of steps in which it was detached.

8.13 CIS Sensor Unit Assemblies

Detaching a CIS sensor unit assembly

(1) Detach the top and shield covers (see Sections 8.1 and 8.6).

(2) Detach the board base chassis (see Section 8.12).

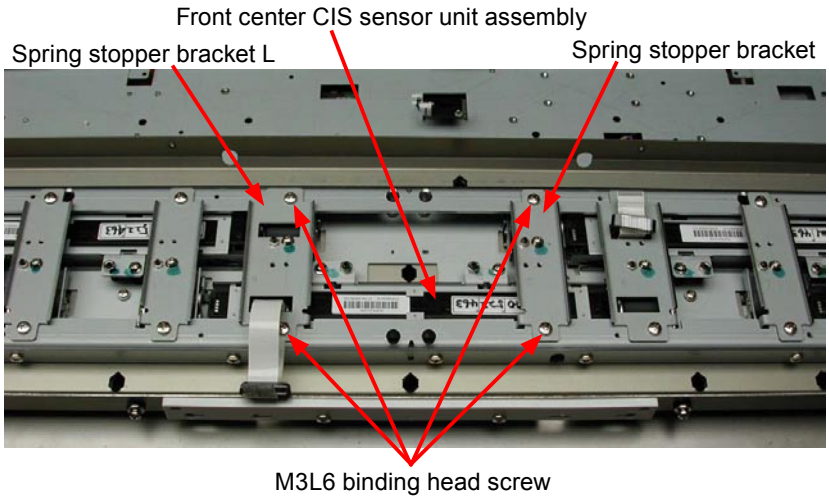

Spring stopper bracket L
Rear CIS sensor unit assembly
Spring stopper bracket
Front center CIS sensor unit assembly
Front right CIS sensor unit assembly
Front left CIS sensor unit assembly

Checkpoint

When detaching the spring stopper brackets, mark the location of each spring stopper bracket. Do not swap the location of each spring stopper when installing the spring stoppers.
(Especially when detaching the rear left CIS sensor unit assembly)

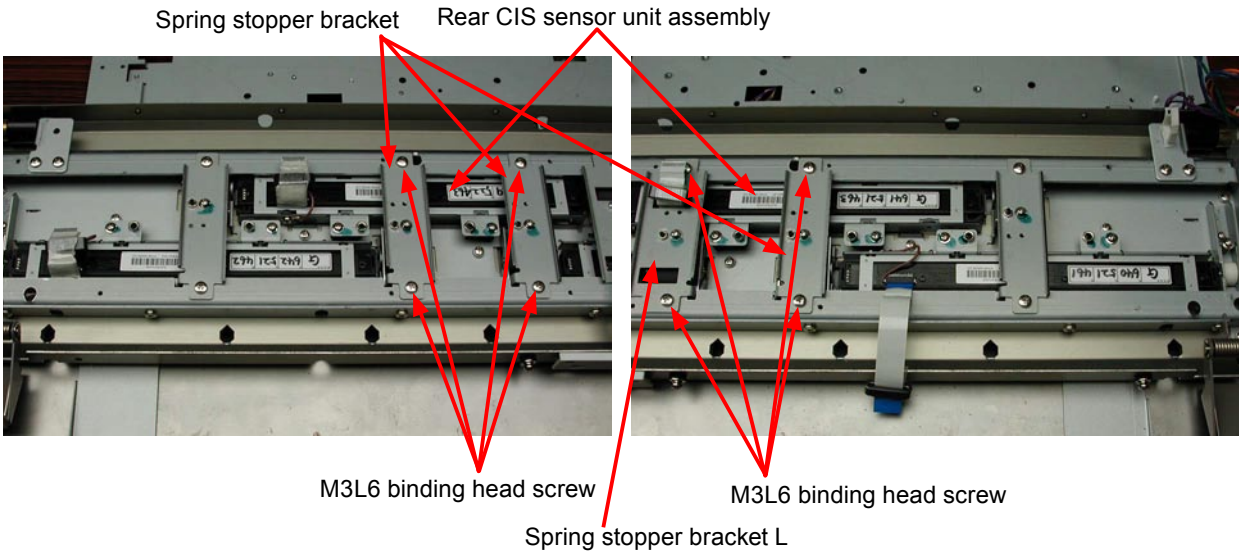
Center CIS sensor unit assembly

(3) Remove the four M3L6 binding head screws holding the spring stopper bracket L and the spring stopper bracket.



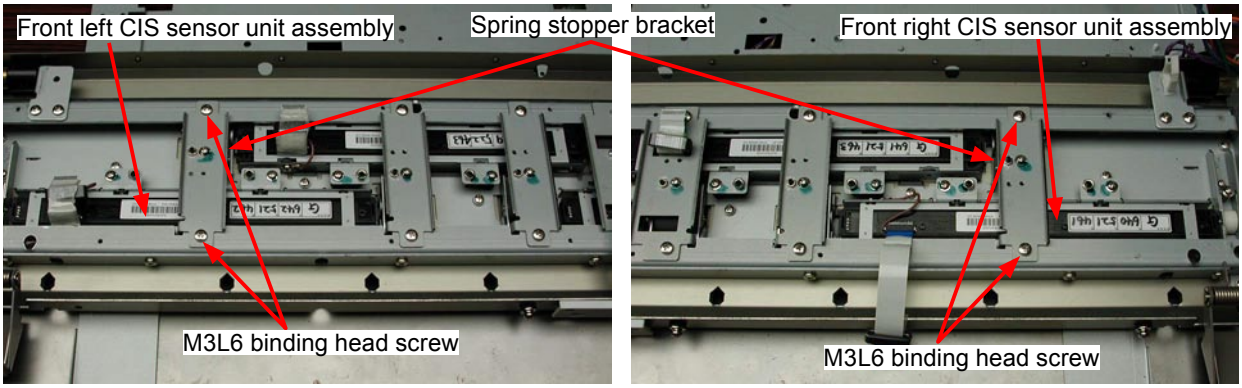
Rear CIS sensor unit assemblies

(3) Remove the four M3L6 binding head screws holding the spring stopper bracket L and the spring stopper bracket.

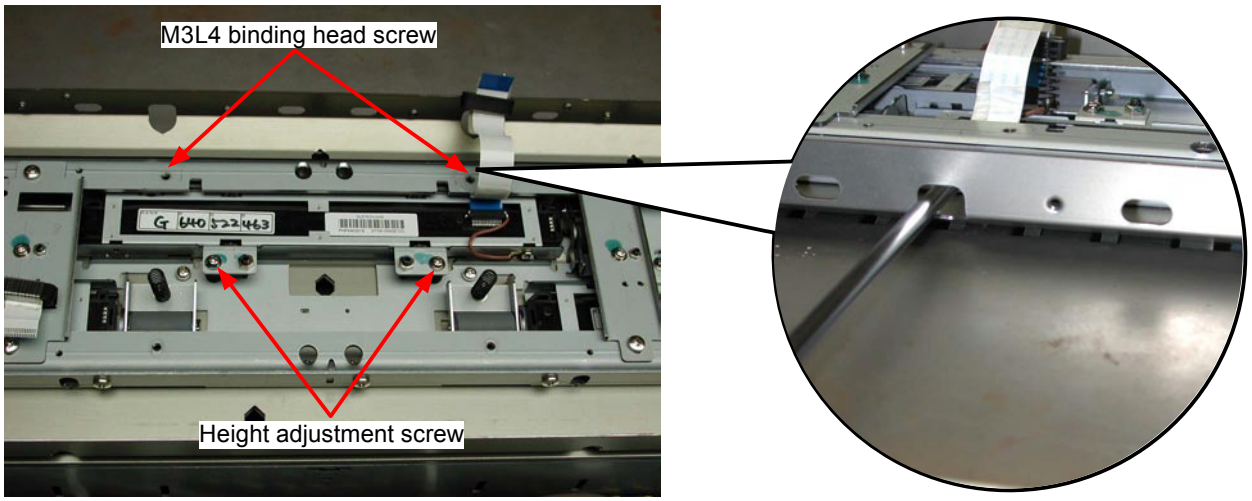

Spring stopper bracket
Rear CIS sensor unit assembly
M3L6 binding head screw
M3L6 binding head screw
Spring stopper bracket L

Front CIS sensor unit assemblies

(3) Remove the two M3L6 binding head screws holding the spring stopper bracket.


Front left CIS sensor unit assembly
Spring stopper bracket
Front right CIS sensor unit assembly
M3L6 binding head screw
M3L6 binding head screw

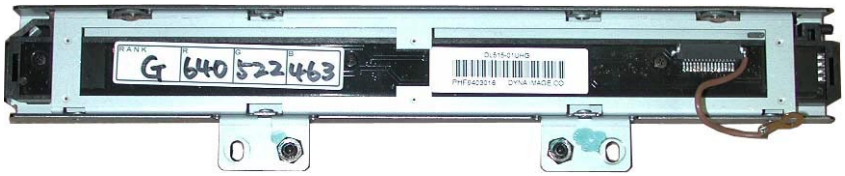
(4) Remove the two M3L4 binding head screws and the two height adjustment screws holding the CIS sensor unit assembly.



Reattaching a CIS sensor unit assembly

(1) Reattach the CIS sensor unit assembly by reversing the sequence of steps in which it was detached.

(2) Use a CIS sensor of the same rank when replacing a CIS sensor.
The CIS sensor rank is indicated on the CIS sensor unit and the bottom of the scanner chassis.



(3) Perform the CIS sensor unit height adjustment (see Section 8.18) and the software adjustment.

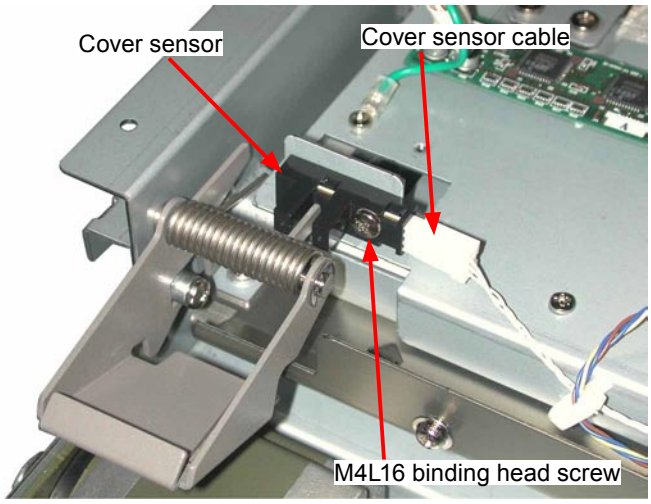
How to find out the CIS sensor rank

There is the CIS sensor rank label on the bottom chassis as shown in a picture below. so prepare same rank of the CIS sensor before replacing the CIS sensor.

8.14 Cover Sensor (LG217L-3)

Detaching the cover sensor

(1) Detach the top and shield covers (see Sections 8.1 and 8.6).
(2) Disconnect the cable that is connected to the cover sensor.
(3) Remove the M4L16 binding head screw holding the cover sensor.



(4) Detach the cover sensor from the board base assembly.

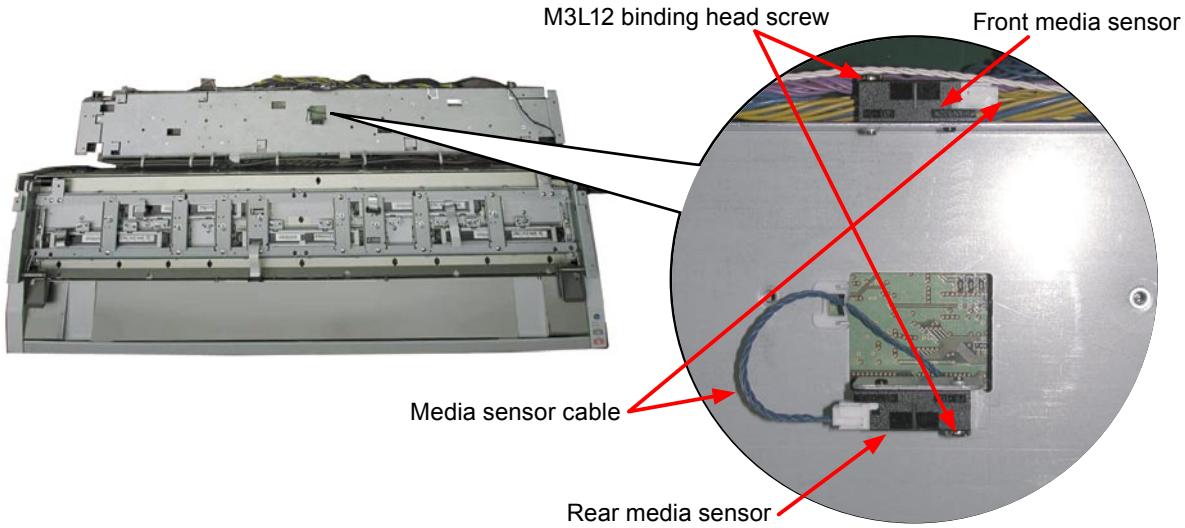
Reattaching the cover sensor

(1) Reattach the cover sensor by reversing the sequence of steps in which it was detached.

8.15 Media Sensor (PS117ND1)

Detaching the media sensors

(1) Detach the top and shield covers (see Sections 8.1 and 8.6).
(2) Detach the board base assembly (see Section 8.12).
(3) Disconnect the cable that is connected to the front or rear media sensor.



(4) Remove the M3L12 binding head screws holding the front or rear media sensor.
(5) Detach the media sensor from the board base assembly.

Reattaching the cover sensors

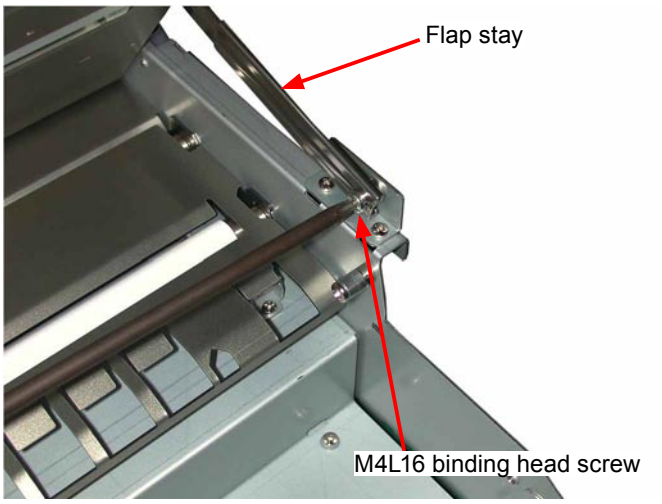
(1) Reattach the media sensors by reversing the sequence of steps in which they were detached.

8.16 Top Assembly

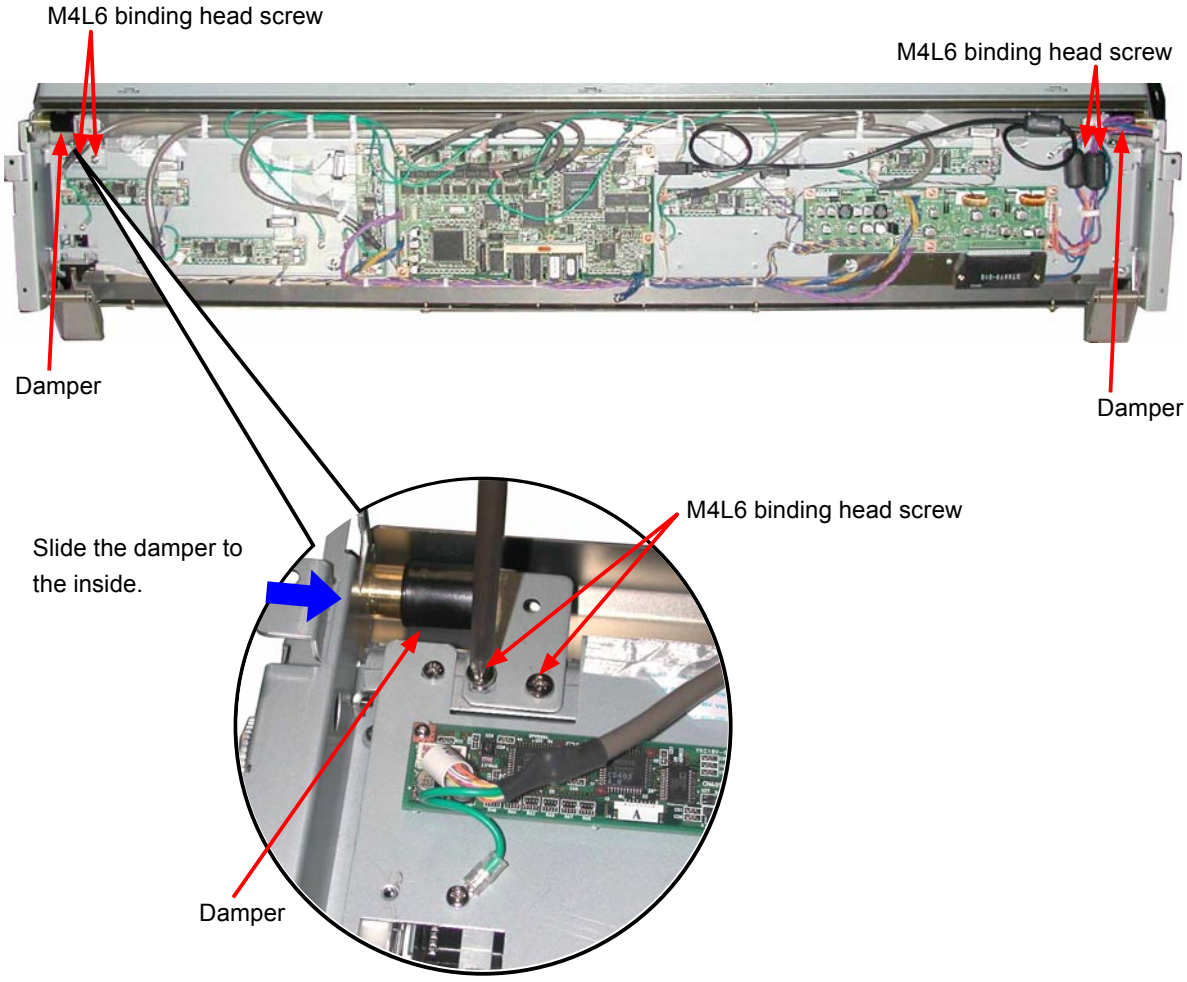
Detaching the top assembly

(1) Detach the top, left side, right side and shield covers (see Sections 8.1, 8.2, 8.3 and 8.6).

(2) Remove the M4L16 binding head screw holding the flap stay, and then disconnect the flap stay from the main unit.

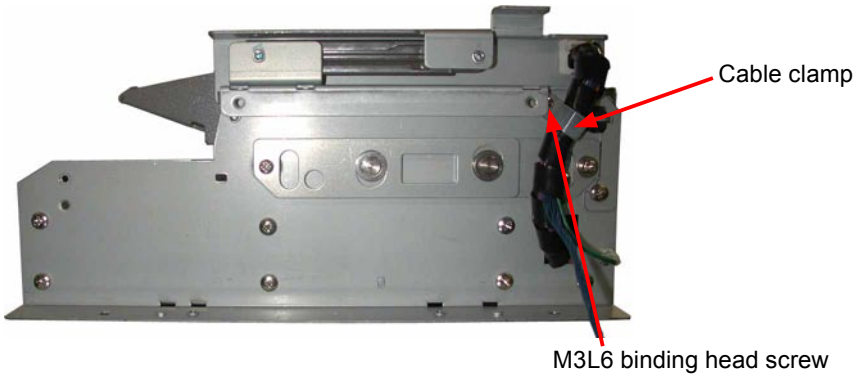


(3) Remove the four M4L6 binding head screws holding the right and left damper brackets.

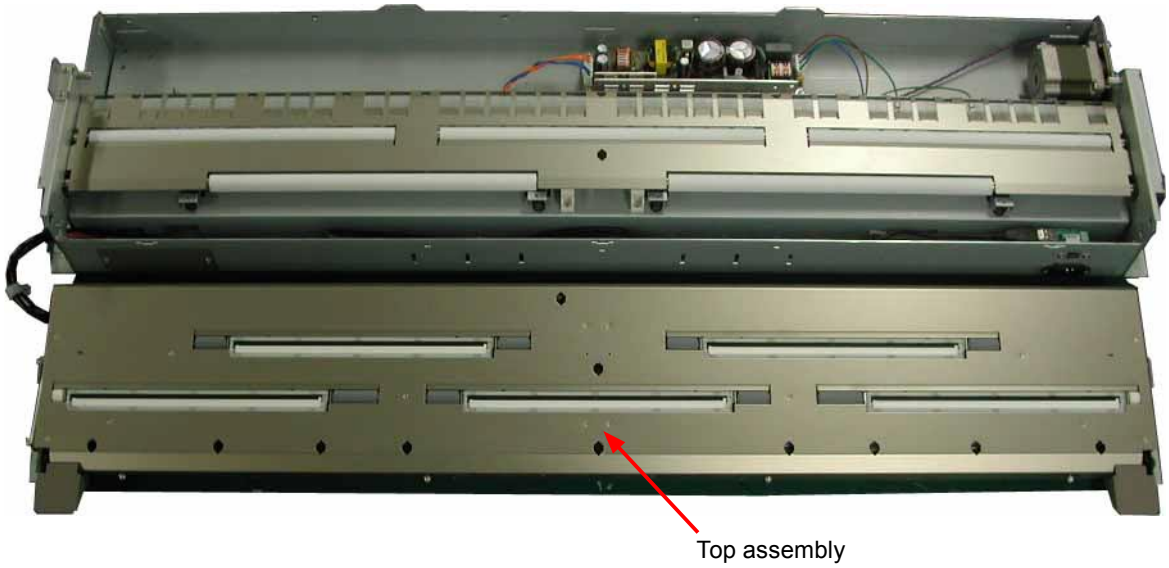


(4) Slide the left and right dampers to the inside to disconnect the dampers from the main unit.

(5) Remove the M3L6 binding head screw holding the cable clamp.



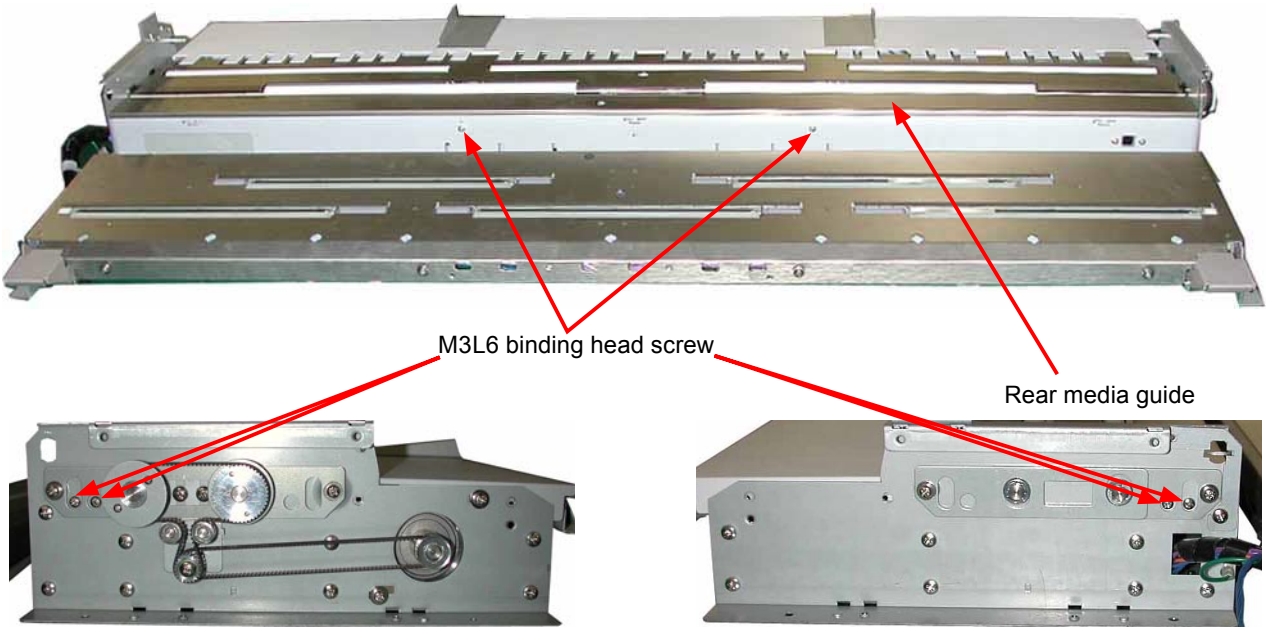
(6) Lay the top assembly down as shown in the photograph below.



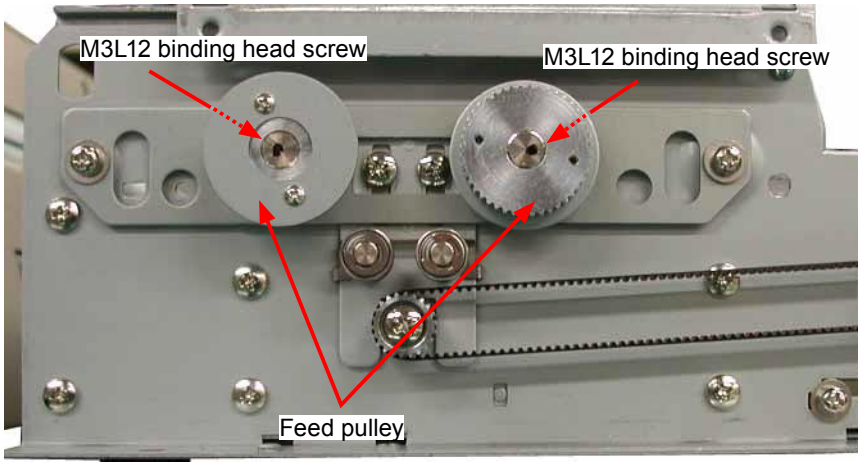
8.17 Feed Rollers

Detaching the feed rollers

(1) Detach the top assembly (see Section 8.16).
(2) Detach the front guide assembly (see Section 8.5).
(3) Remove the six M3L6 binding head screws holding the rear media guide.

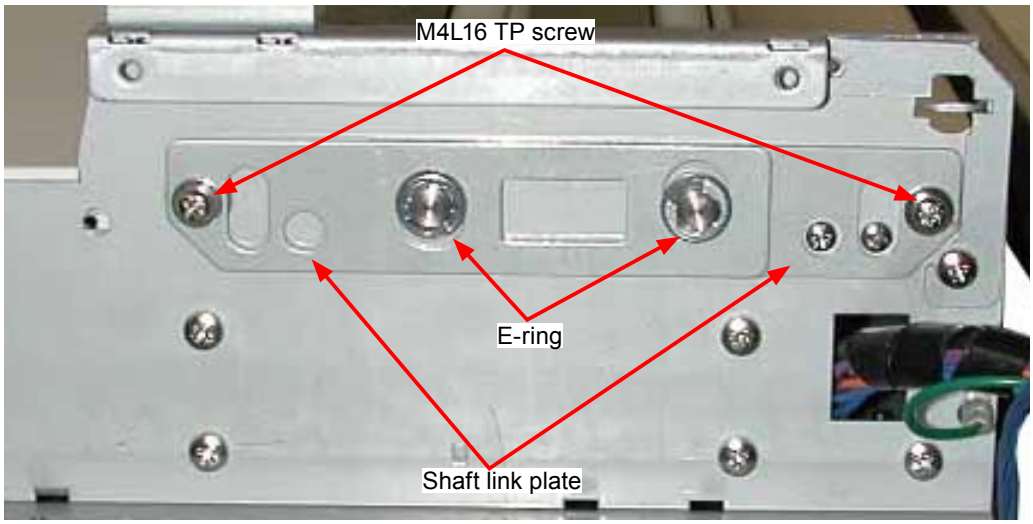


(4) Detach the rear media guide.
(5) Detach the feed drive belt (see Section 8.8).
(6) Remove the two M3L12 binding head screws holding the feed pulleys.



(7) Detach the feed pulleys from the feed rollers.

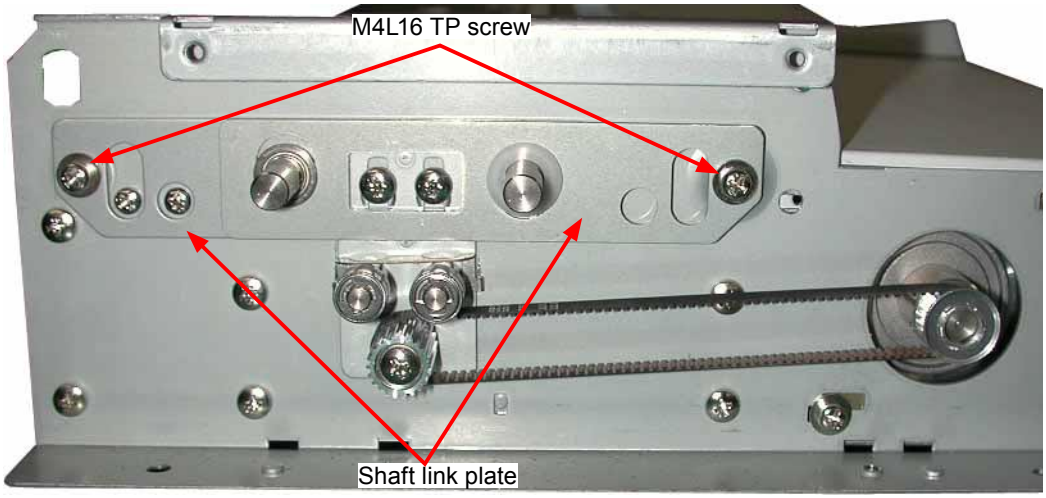
(8) Remove the E-rings holding the left side feed roller bearings.



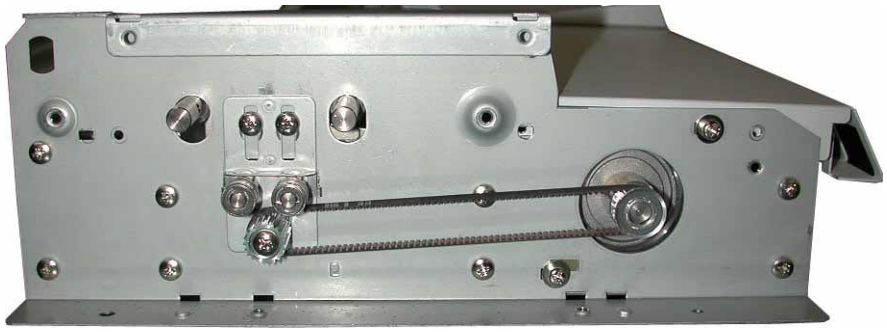
(9) Remove the two M4L16TP screws holding the two right side shaft link plates.

(10) Detach the bearings, collars and right side shaft link plates from the main unit.

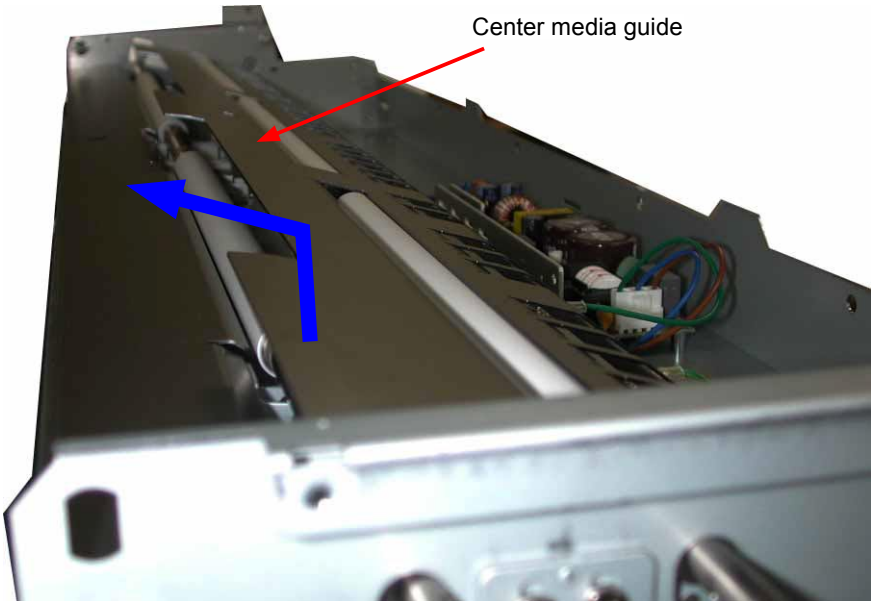
(11) Remove the two M4L16TP screws holding the two right side shaft link plates.



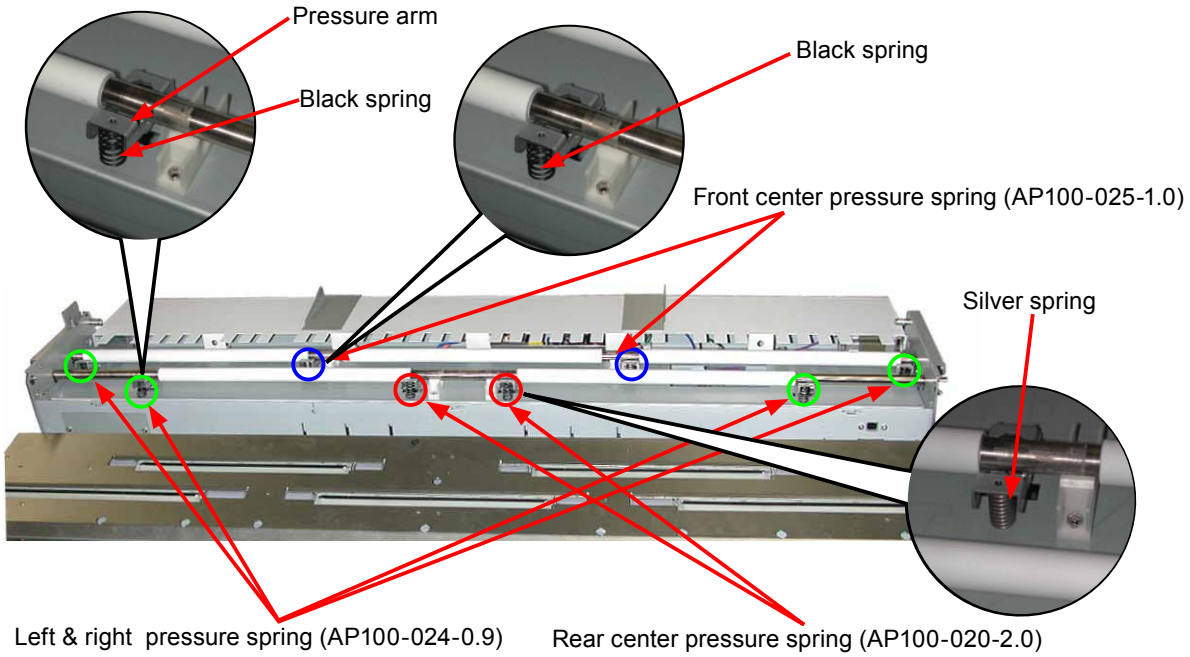
(12) Detach the bearings, collars and left side shaft link plates from the main unit.



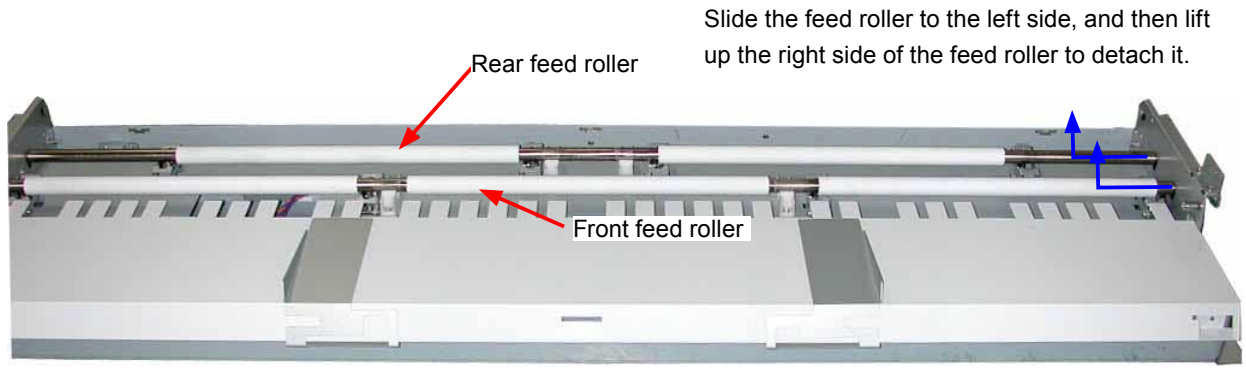
(13) Lift up the rear part of the center media guide, slide it in the rear direction, and then detach the center media guide from the main unit.



(14) Detach the four left and right side springs (AP100-024-0.9) the two front center springs (AP100-025-1.0), and the two spring rear center springs (AP100-020-1.2) from the pressure arm.



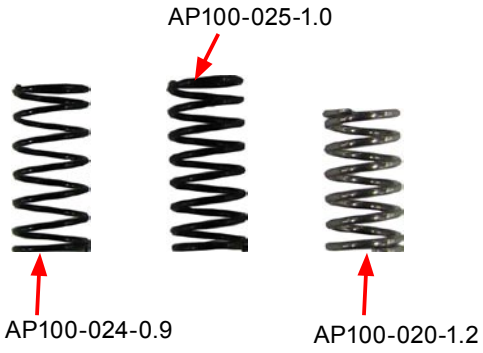
(15) Slide the feed roller to the left side, and then lift up the right side of the feed roller to detach it.


Slide the feed roller to the left side, and then lift up the right side of the feed roller to detach it.
Rear feed roller
Front feed roller

Reattaching the feed rollers

(1) Reattach the feed rollers by reversing the sequence of steps in which they were detached.

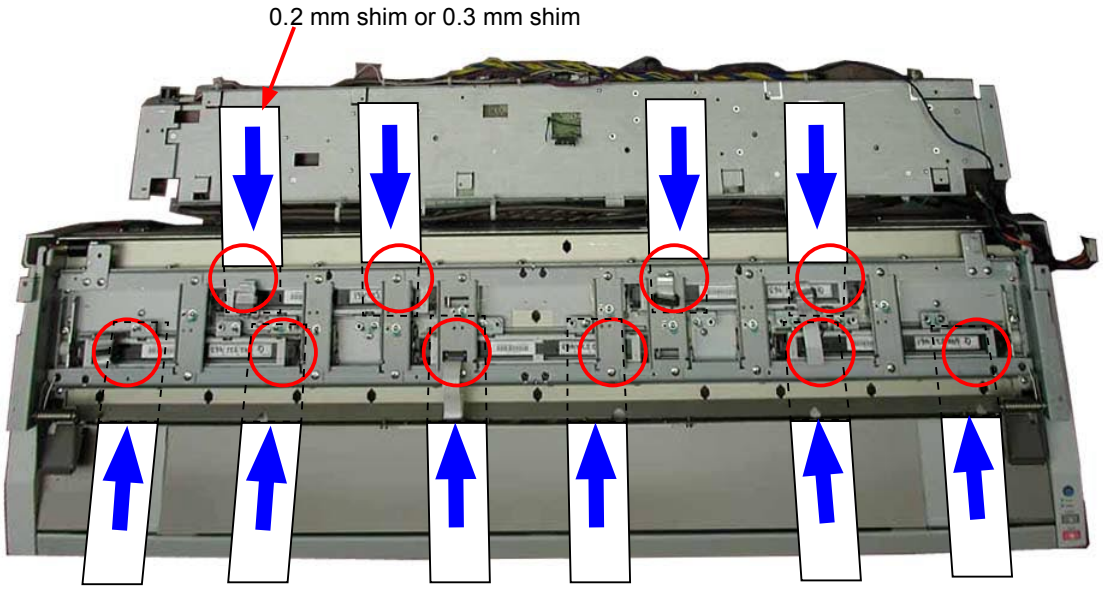
(2) There are three kinds of springs; do not install them in the wrong positions.



8.18 Adjusting the CIS Sensor Height

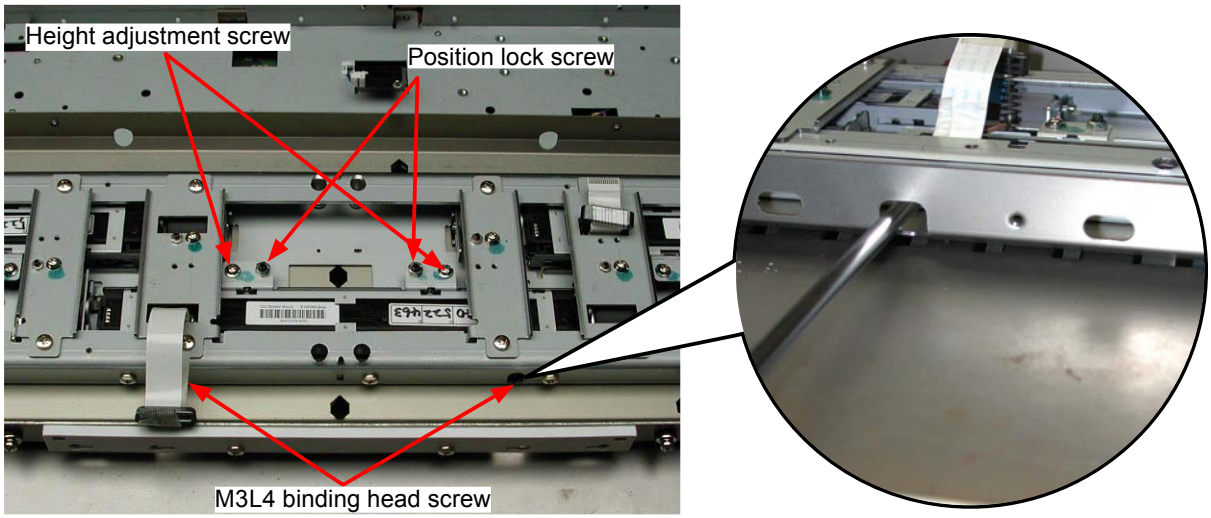
Adjusting the CIS sensor height

(1) Detach the board base chassis assembly (see Section 8.12).
(2) Close the top assembly, and then insert the plastic shim under the CIS sensor unit assembly.
(3) Adjust the gap to 0.25 mm.
(4) Confirm that the 0.2 mm shim passes through the gap and that the 0.3 mm shim dose not pass through the gap.



Insert the shims in the areas indicated by the red circles to adjust the gap between the CIS sensor and the feed roller.

(5) Loosen the two M3L4 binding screws holding the CIS sensor unit assembly.



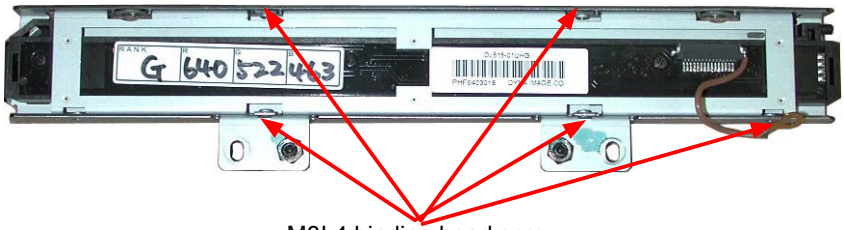
(6) Adjust the gap using the height adjustment screw.
(7) Tighten the two M3L4 binding screws holding the CIS sensor unit assembly after adjustment has been completed.
(8) Tighten the two position lock screws.
(9) Reassemble the board base chassis assembly (see Section 8.12).
(10) Detach the left and right side covers (see Sections 8.2 and 8.3).

8.19 Contact Glass Plate Assembly

Detaching the contact glass plate assembly

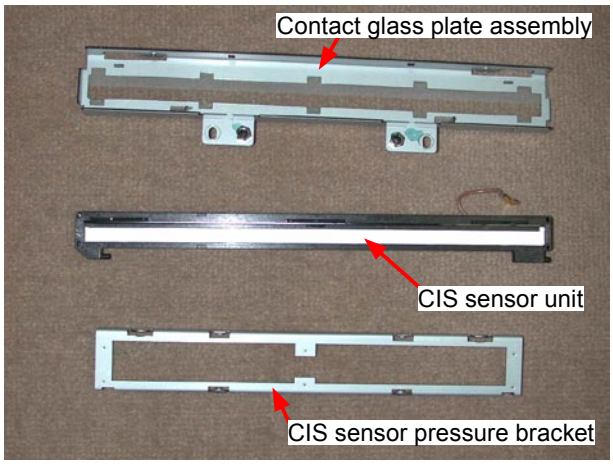
(1) Detach the CIS sensor unit assembly (see Section 8.13).

(2) Remove the five M3L4 binding head screws holding the CIS sensor pressure bracket.



(3) Loosen the two M3L8 set screws holding the CIS sensor.

(4) Detach the contact glass plate assembly.



Reattaching the contact glass plate assembly

(1) Reattach the contact glass plate in the reverse order in which it was detached.

(2) Make sure that the CIS unit surface lies flat against the inside of the contact glass plate assembly when you reattach the contact glass plate assembly.

(3) Perform the CIS sensor height adjustment (see section 8.18) and the software adjustment.

Checkpoint

When replacing the contact glass assembly, be sure to clean the interior of the image sensor unit and the inside of the contact glass plate assembly. A soiled or dusty unit can affect scanning performance.

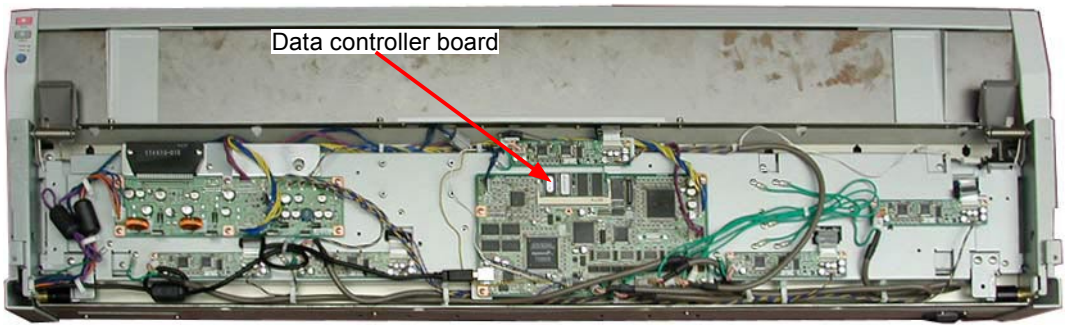
8.20 Data Controller Board

Checkpoint

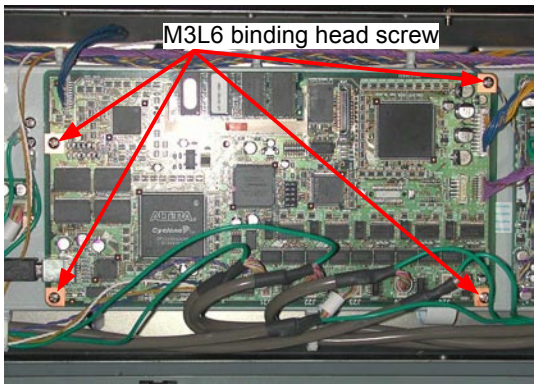
When replacing the data controller board, perform the software adjustment if it is possible to obtain the former setting values from the data controller board.

Detaching the data controller board for the SK200-09 (Old)

(1) Detach the top cover and the shield cover (see Sections 8.1 and 8.6).



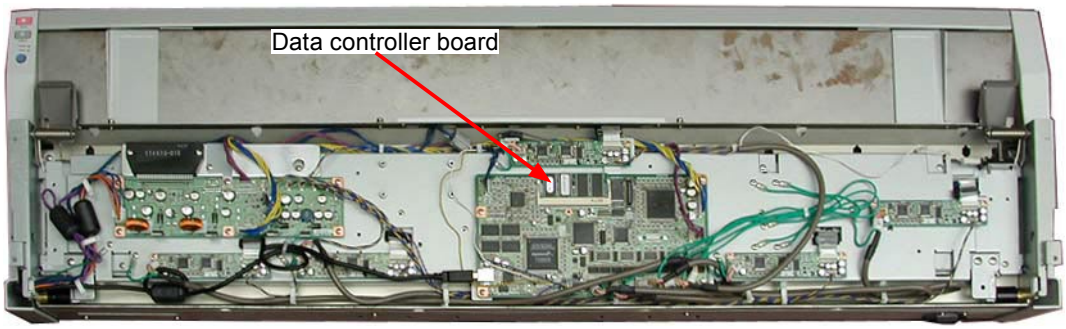
(2) Disconnect all the connectors on the data controller board and remove the four M3L6 binding head screws holding the data controller board.



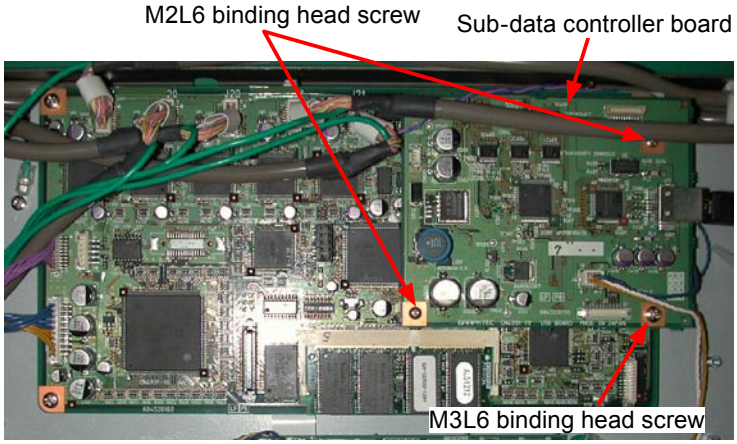
(3) Detach the data controller board from the unit.

Detaching the data controller board for the SK200-09-A (New))

(1) Detach the top cover and the shield cover (see Sections 8.1 and 8.6).

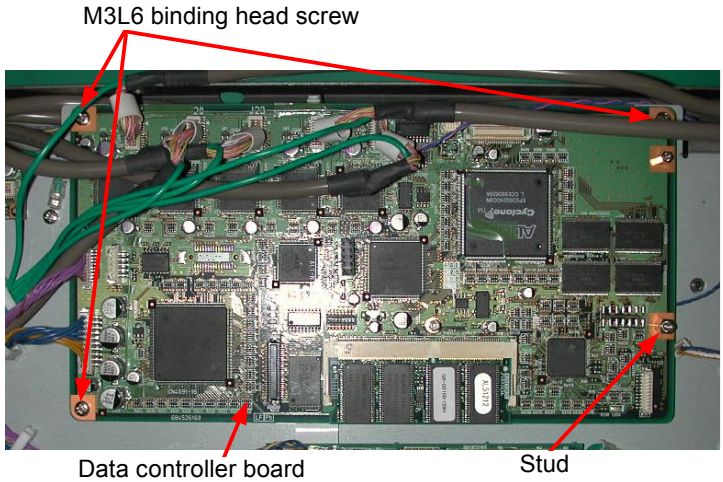


(2) Disconnect all the connectors on the sub-data controller board and remove the two M2L6 binding head screws and M3L6 binding head screws holding the sub-data controller board.



(3) Detach the sub-dara controller board from the data controller board.

(4) Disconnect all the connectors on the data controller board and remove the three M3L6 binding head screws and the stud holding the sub-data controller board.



(5) Detach the dara controller board from the unit.

Reattaching the data controller board

(1) Reattach the data controller board in the reverse order in which it was detached.

(2) Perform the software adjustment to input the former setting values or use the software to adjust the scanner. (See "Preparations before Making Adjustments" in Section 9.2)

Checkpoint

When replacing the data controller board, perform the software adjustment to obtain the former setting values from the data controller board. (See "Preparations before Making Adjustments" in Section 9.2)

How to find out type of the data controller board

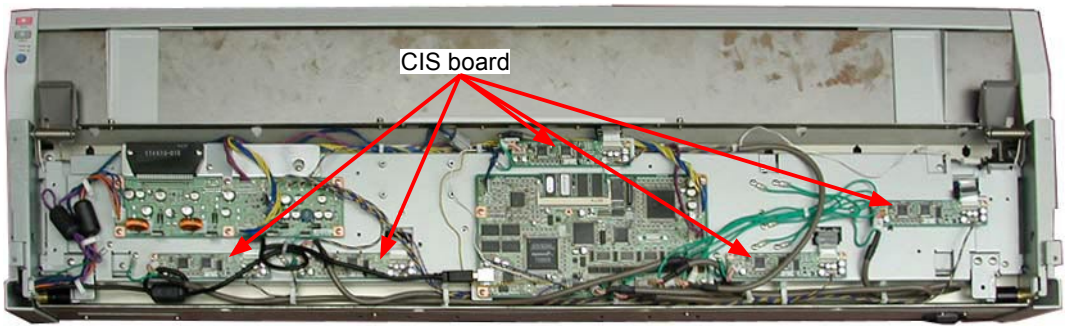
There are two kinds of the data controller boards, which is used to SK200-09 or SK200-09-A.
So prepare corresponded data controller board before replacing the data controller board.
The model name label is showing the type of the data controller board.
If the model name is SK200-09 use the old type of the data controller board.
If the model name is SK200-09-A use the new type of the data controller board.

Confirm this label to find out the type of board.

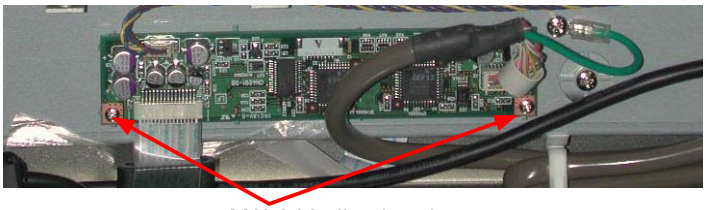
8.21 CIS (Contact Imaging Sensor) Board

Detaching the CIS boards

(1) Detach the top cover and the shield cover (see Sections 8.1 and 8.6).



(2) Disconnect all the connectors on the CIS board and remove the two M2L6 binding head screws holding the CIS board.



M2L6 binding head screw

(3) Detach the CIS board from the unit.

Reattaching the CIS boards

(1) Reattach each CIS board in the reverse order in which it was detached.

(2) When you have replaced the CIS boards, perform calibration using the software adjustment.

How to find out type of the CIS boards

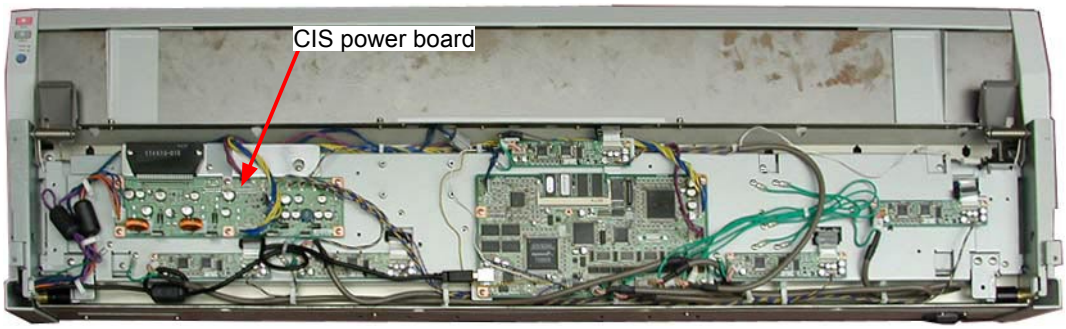
There are two kinds of the CIS boards, which is used to SK200-09 or SK200-09-A.
So prepare corresponded CIS boards before replacing the CIS boards.
The model name label is showing the type of the CIS boards.
If the model name is SK200-09 use the old type of the CIS boards.
If the model name is SK200-09-A use the new type of the CIS boards.

Confirm this label to find out the type of board.

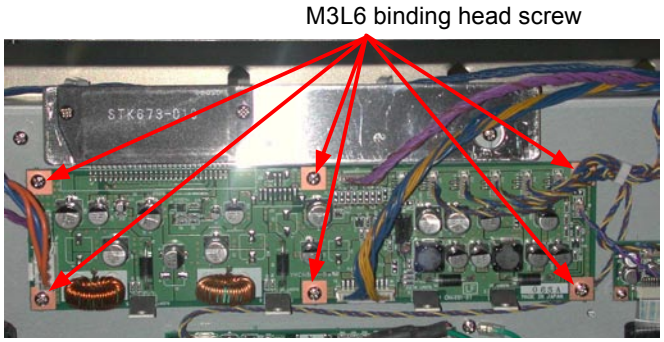
8.22 CIS Power Board

Detaching the CIS power board

(1) Detach the top cover and the shield cover (see Sections 8.1 and 8.6).



(2) Disconnect all the connectors on the CIS power board and remove the six M3L6 binding head screws holding the CIS power board.



(3) Detach the CIS power board from the unit.

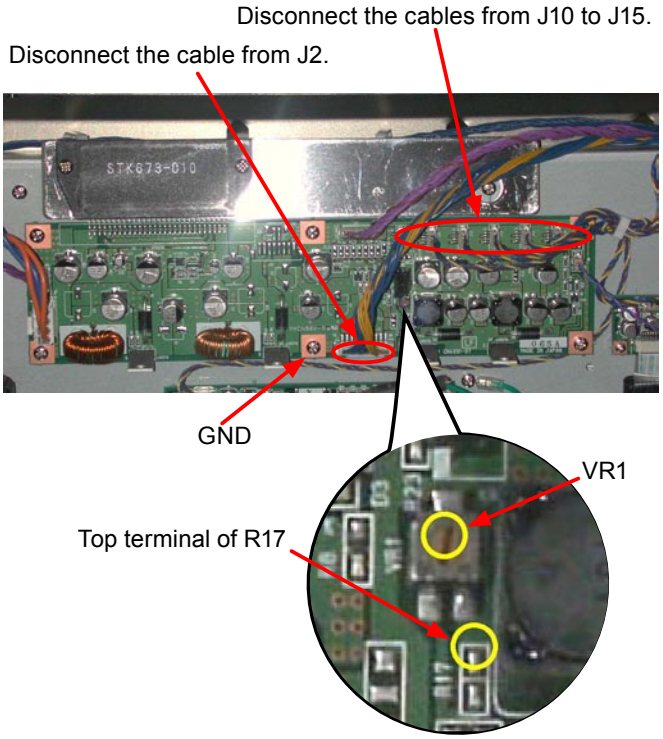
Reattaching the CIS power board

(1) Reattach the CIS power board in the reverse order in which it was detached.

(2) Check that the output voltage is 5.3V ±0.02V between the VR1 side of R17 and GND when you replace the CIS power board.

How to check the output voltage

1. Disconnect the cables from J2 and from J10 to J15.
2. Turn on the power. (Connect the power cable to the scanner power inlet.)
3. Measure the output voltage between the VR1 side of R17 and GND.
4. If the output voltage is not 5.3V ±0.02V, adjust the voltage using VR1 on the CIS power board.



How to find out type of the CIS power boards

There are two kinds of the CIS power boards, which is used to SK200-09 or SK200-09-A.
So prepare corresponded CIS power boards before replacing the CIS power boards.
The model name label is showing the type of the CIS power boards.
If the model name is SK200-09 use the old type of the CIS power boards.
If the model name is SK200-09-A use the new type of the CIS power boards.

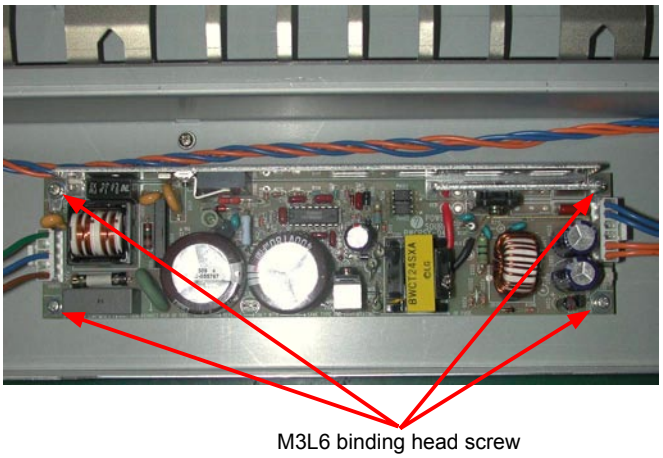
Confirm this label to find out the type of board.

8.23 Switching Power Supply Board

Detaching the switching power supply board

(1) Detach the front guide assembly (see Section 8.5).

(2) Remove the four M3L6 binding head screws holding the switching power supply board.



M3L6 binding head screw

(4) Disconnect all the connectors on the switching power supply board.

(5) Detach the switching power supply board from the unit.

Reattaching the switching power supply board

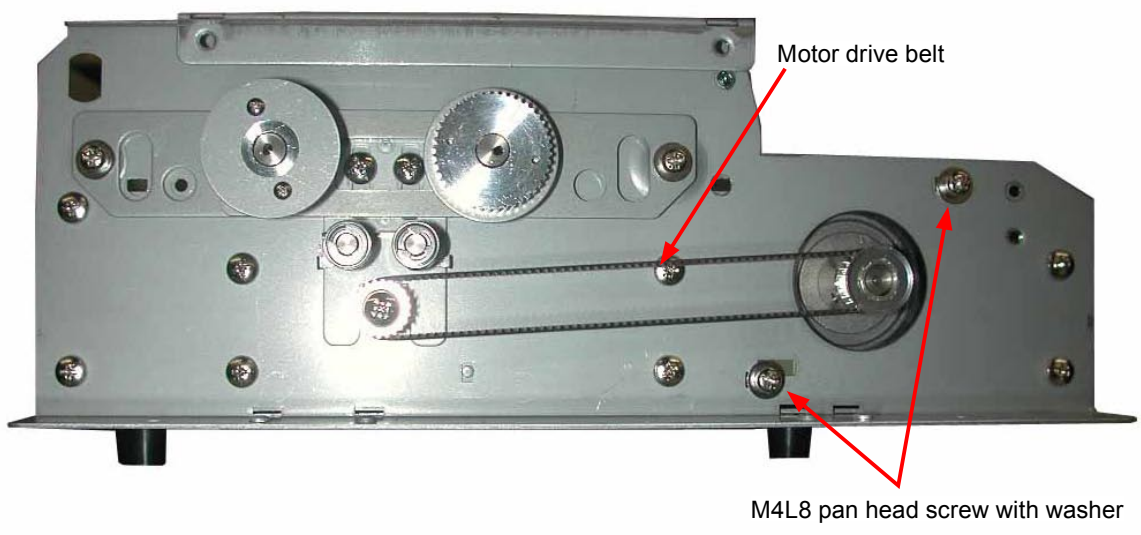
(1) Reattach the switching power supply board in the reverse order in which it was detached.

8.24 Feed Motor

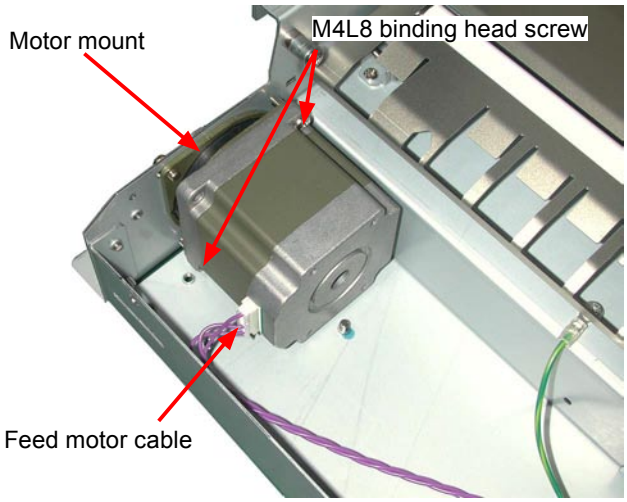
Detaching the feed motor

(1) Detach the front guide assembly (see Section 8.5).

(2) Remove the two M4L8 pan head screws with washer holding the feed motor.



(3) Disconnect the cable from the feed motor.



(4) Remove the two M4L8 binding head screws holding the motor mount.

Reattaching the feed motor

(1) Reattach the feed motor in the reverse order in which it was detached.

(2) Adjust the motor drive belt tension (see Section 8.11).

9. ADJUSTMENTS USING THE SOFTWARE

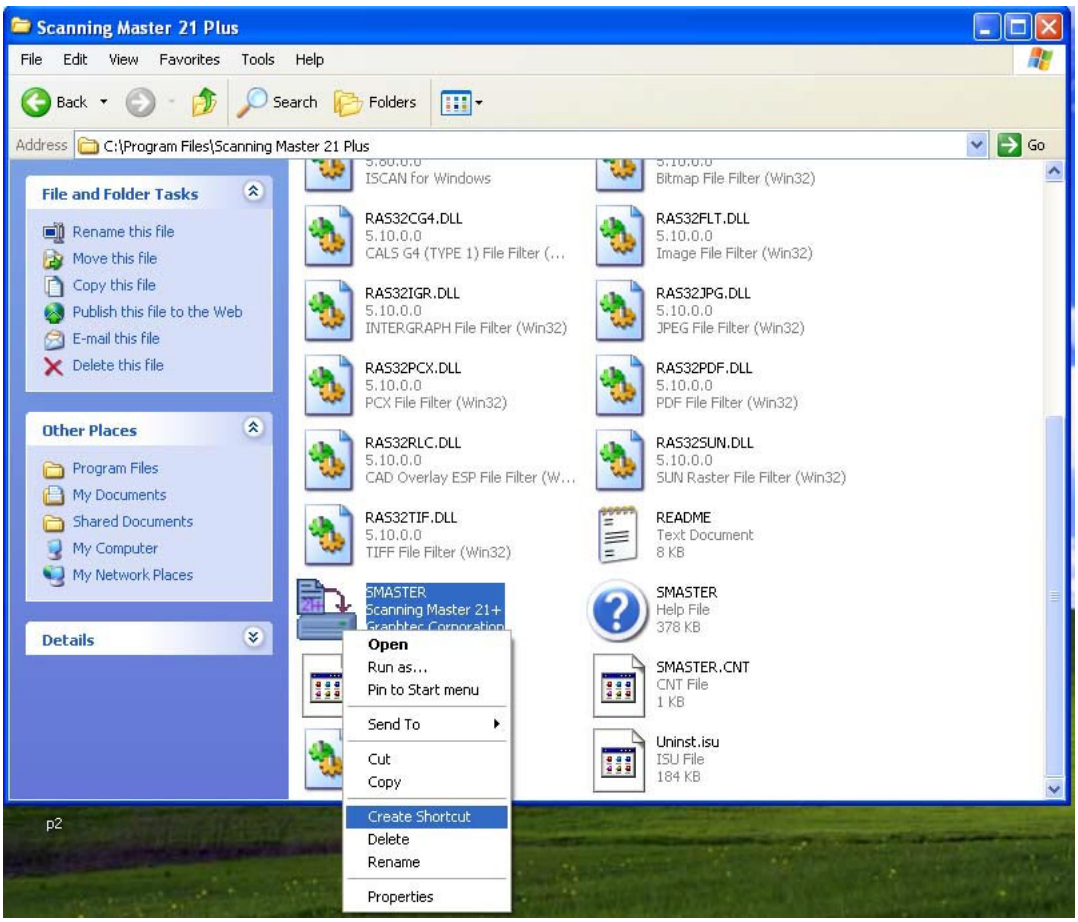
9.1 Starting the Software

• Ensure that OPS112 (Scanning Master 21+ Ver 6.40 or later) is installed.

(1) Connect the scanner to the PC using a USB cable and turn it on (connect the AC cable to the scanner power inlet).

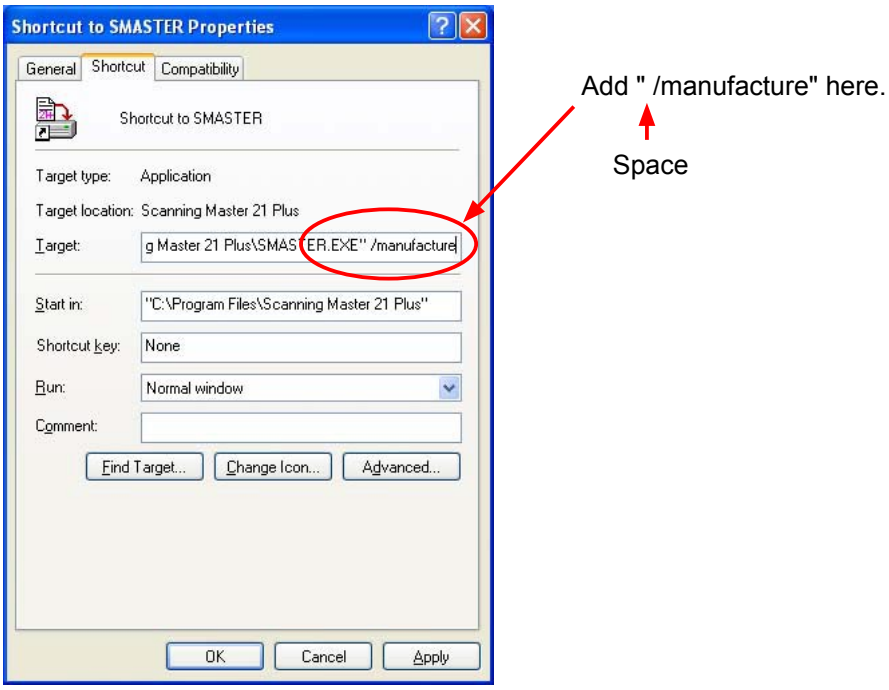
(2) Start Windows (OS).

(3) Create a Shortcut for Scanning Master 21+.

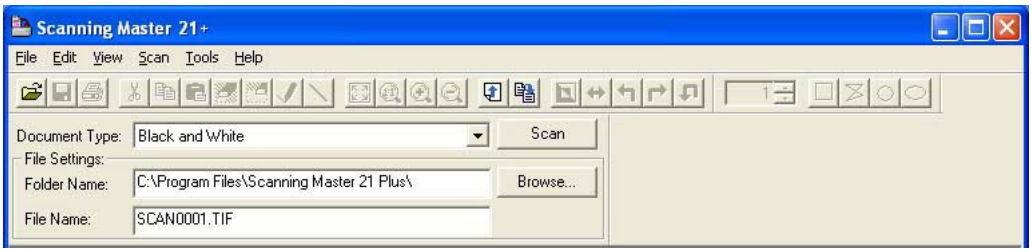


(4) Open the Scanning Master 21+ Shortcut Properties dialog box.

(5) Add " /manufacture" after the Target file name.

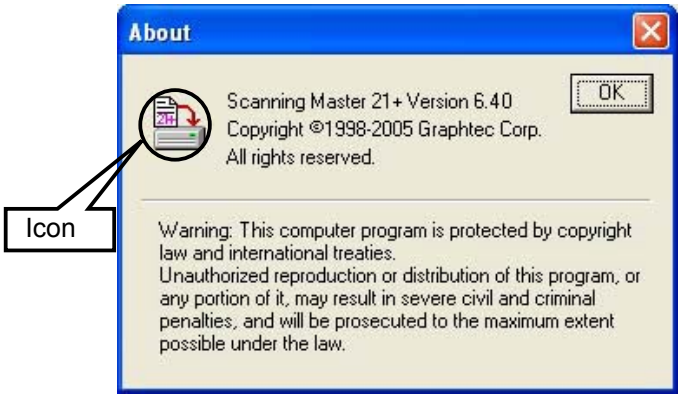


(6) Run the Scanning Master 21+ (OPS112) from the shortcut icon.

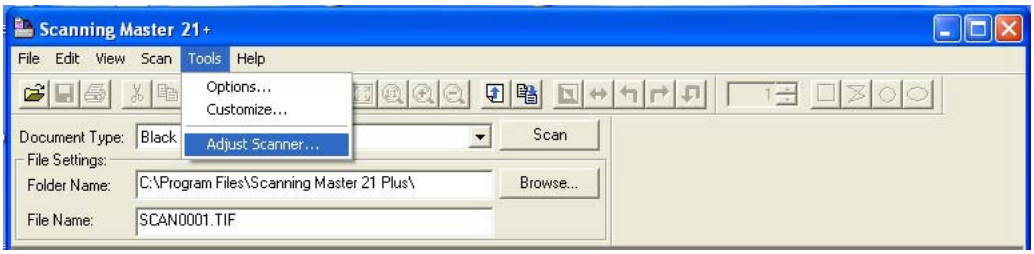


(7) Select "About" from the "Help" menu.

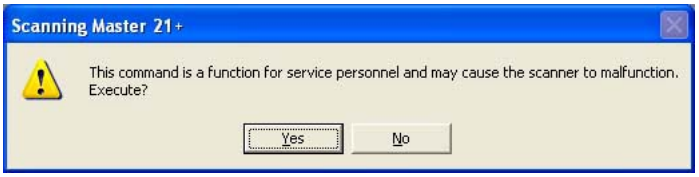
(8) Click the scanner icon while pressing and holding down the "Ctrl" key.
Next, click the "OK" button while pressing and holding down the "Shift" key.


About
OK
Scanning Master 21+ Version 6.40
Copyright ©1998-2005 Graphtec Corp.
All rights reserved.
Warning: This computer program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Icon

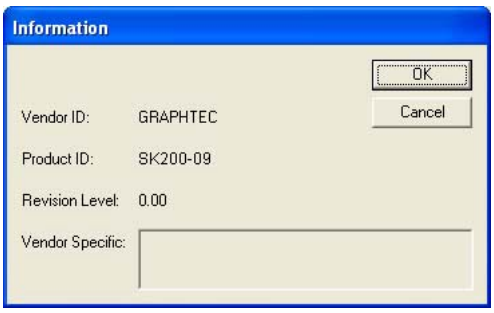
(9) Select "Adjust Scanner" from the "Tools" menu.

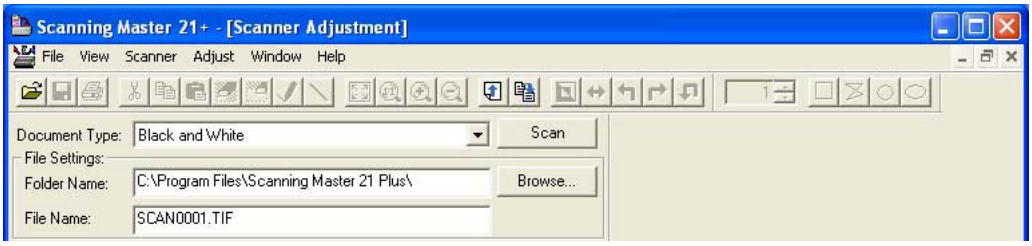


(10) Select "Yes".


Scanning Master 21+
This command is a function for service personnel and may cause the scanner to malfunction.
Execute?
Yes
No

(11) When you click the "OK" button in the following window, the Scanner Adjustment window will appear with an Adjust menu.





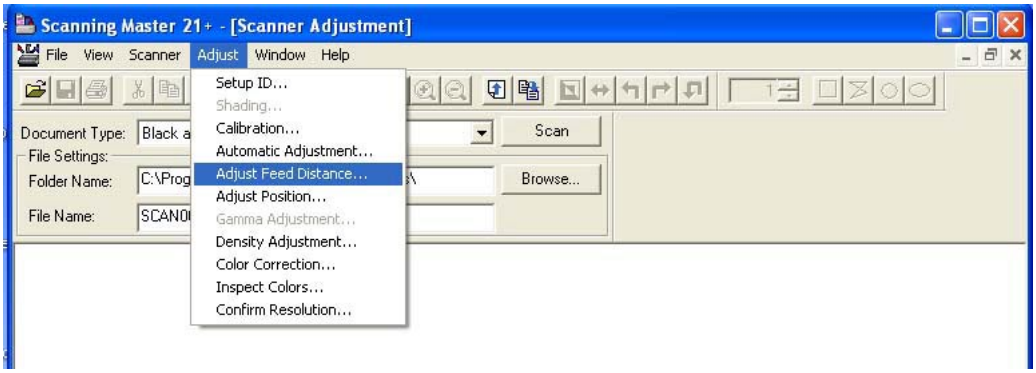
9.2 Preparations before Making Adjustments

Note the current feed distance adjustment and position adjustment values while making adjustments.
This enables the values to be entered directly from the keyboard to restore the scanner to its previous status if adjustment fails.
In main board replacement, the time required for adjustment can be reduced by setting the previously noted feed distance adjustment and position adjustment values. However, for image sensor unit replacement, all settings must be adjusted, eliminating the need to record the previous values.

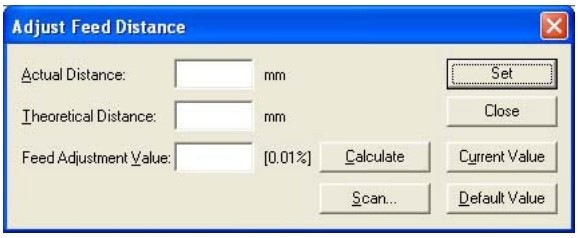
Adjustment Procedure

(1) Start Scanning Master 21+. (See p. 9-1.)

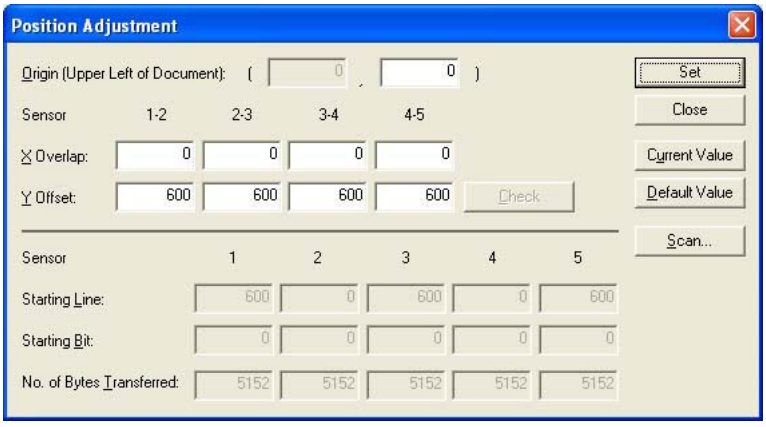
(2) Select "Adjust Feed Distance" from the "Adjust" menu.



(3) Click the "Current Value" button and note the value shown in the Feed Adjustment Value box. After finishing, click the "Close" button.

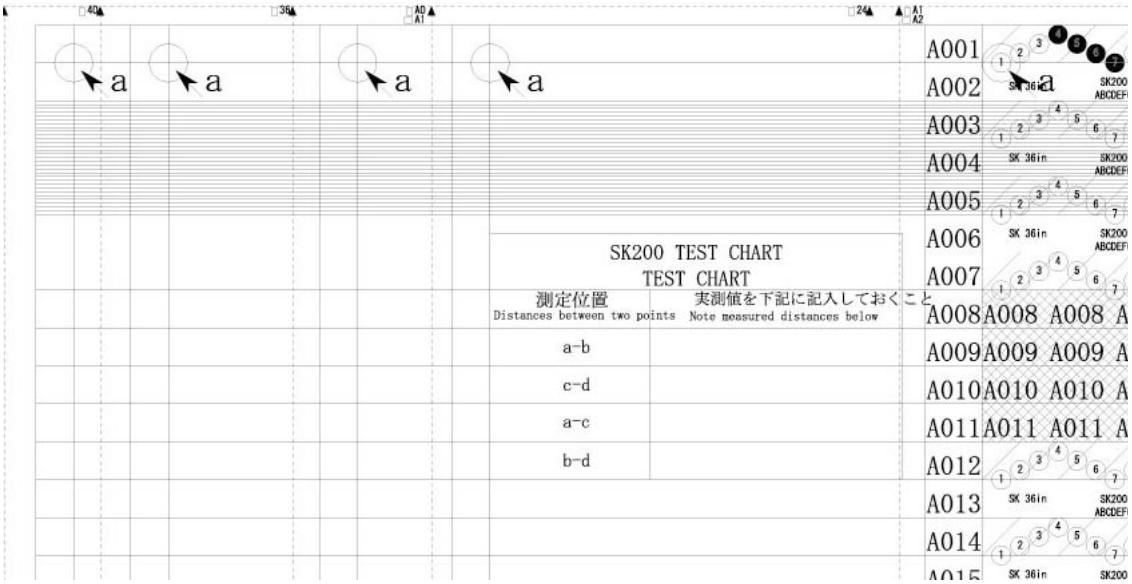


(4) Similarly, select "Adjust Position" from the "Adjust" menu and click the "Current Value" button. Note the values shown in the X Overlap and Y Offset boxes and click the "Close" button.



9.3 Preparing a Test Chart

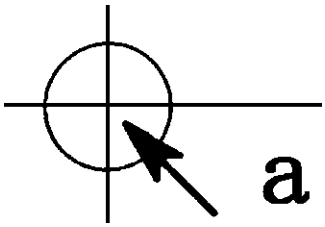
(1) Prepare a SK200 adjustment test chart.



(2) Make sure that the distances (measured with a glass scale) between the two points in all pairs are included in the chart in advance. (See the chart shown above.)

<<Tip 1>> The test chart is made of Mylar paper.
For use in normal office environments (normal temperatures and humidity levels), you should only need to measure each distance once.
Make sure that each distance is measured with the utmost accuracy.

<<Tip 2>> Make sure that all staff members using this test chart select the same measurement points.
This chart has been designed with the assumption that the point shown below is used for measurement.



<<Tip 3>> If user-specified paper must be used for adjustments, you should make the measurements over as long a period of time as possible to obtain good results.

9.4 Making Adjustments

Always follow the sequence given below when making adjustments.

1. Calibration (white correction)

2. Feed distance adjustment

3. Position adjustment

Offset adjustment

Sensor joint alignment

4. Color correction

Scanner Calibration

CHECKPOINT

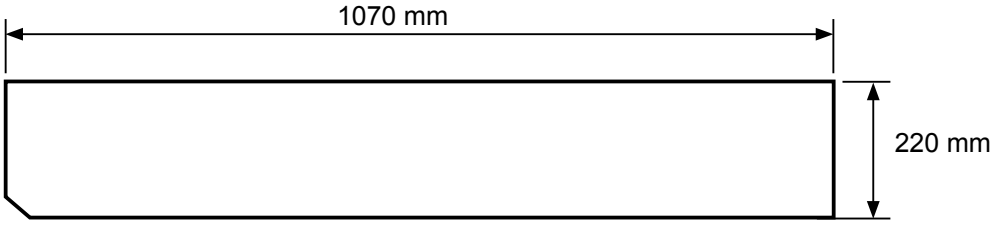
Before beginning calibration, clean the contact glass plates and scanning-table surface. Any dust or dirt on those surfaces may affect the calibration results and resulting image quality.
Check that the calibration sheet is free of any dust or dirt.

1. Calibration (white correction)

(1) Connect the scanner to the computer. Turn on the scanner, (connect the AC cable to the scanner power inlet) then turn on the PC.

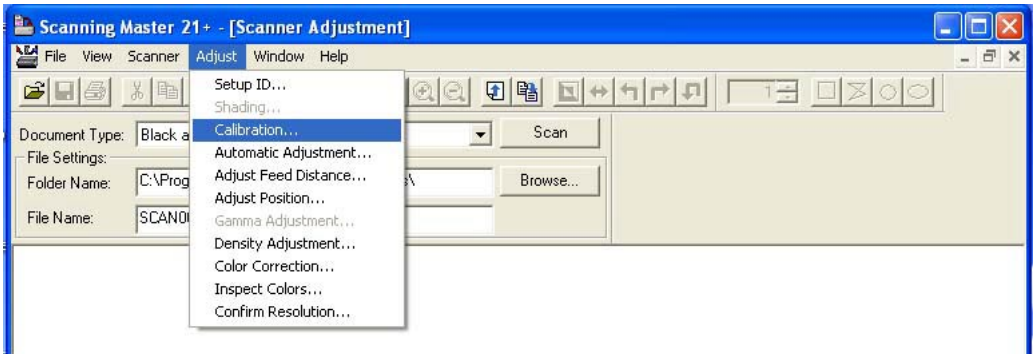
(2) Start Scanning Master 21+. (See p. 9-1.)

(3) Remove the white calibration sheet (220 x 1070 mm) from its special storage box.
Clean the conatct glass plate surfaces and the feed rollers.



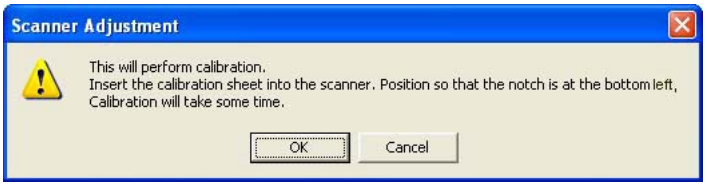
Calibration sheet

(4) Select "Calibration" from the "Adjust" menu.



(5) Select All in Calibration and click the Execute button.

(6) The following message is displayed. Insert the calibration sheet into the scanner as instructed.


Scanner Adjustment
This will perform calibration.
Insert the calibration sheet into the scanner. Position so that the notch is at the bottom left.
Calibration will take some time.
OK
Cancel

(7) Click the OK button to start scanning.
The scanned data is displayed when scanning is complete. Colors may differ slightly for individual sensors to make it easier to identify problem areas in calibration. This does not indicate a defect.
Check that there are no vertical streaks, such as white patches, in the scanned data.
(Streaks occur when calibration is not performed correctly due to contamination by dust or dirt.)

(8) If the data is normal, calibration is complete.
Click the Close button and exit calibration mode.

(9) If any abnormal data is observed, specify the problem areas as follows:
Select Specified Part in Calibration.

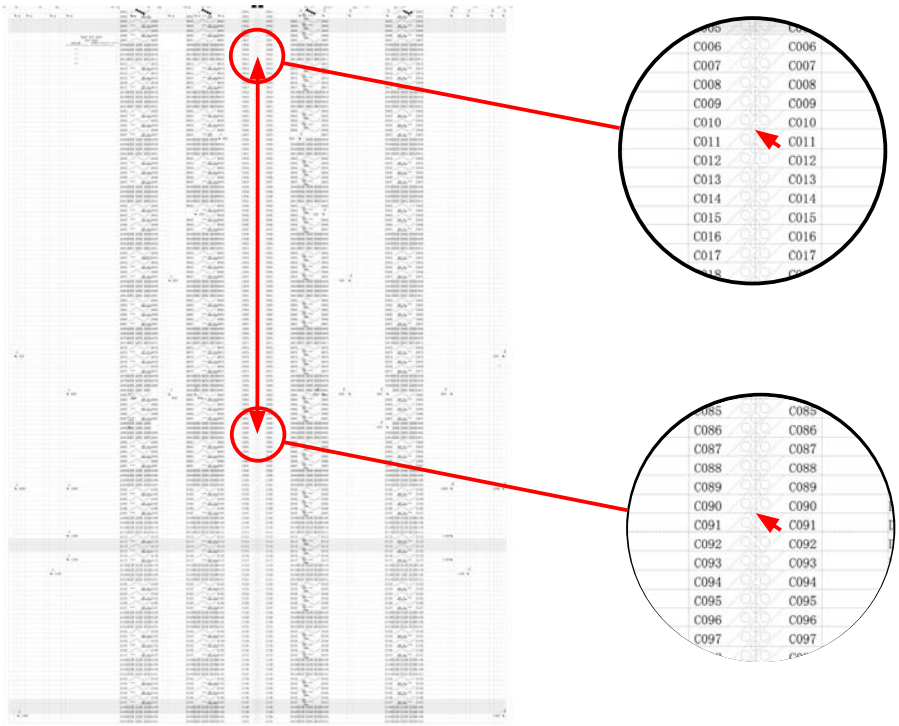
(10) The mouse arrow cursor changes to a cross cursor when moved over the data. Click the left mouse button with the mouse positioned over the streak data. The selected area is shown in blue. Repeat this procedure for any additional streaks.
Areas that have been selected (shown in blue) can be deselected by clicking the left mouse button again. To deselect all selected areas, click the Clear button.

(11) Once all required areas have been specified, remove the calibration sheet and clean the contact glass plate and scanning-table surfaces. Check the calibration sheet for dust and dirt, then click the Execute button.

(12) Return to step (5) and verify the calibration results.

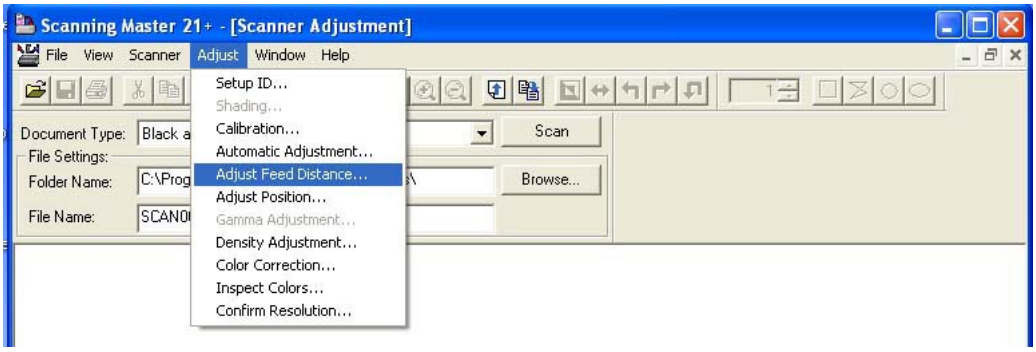
2. Feed distance adjustment

(1) Measure the distances between the C010 and the C090 points in the SK200 Test Chart with a glass scale.

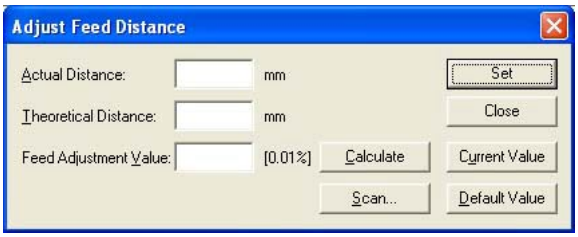


(2) Run the software. (See p. 9-1)

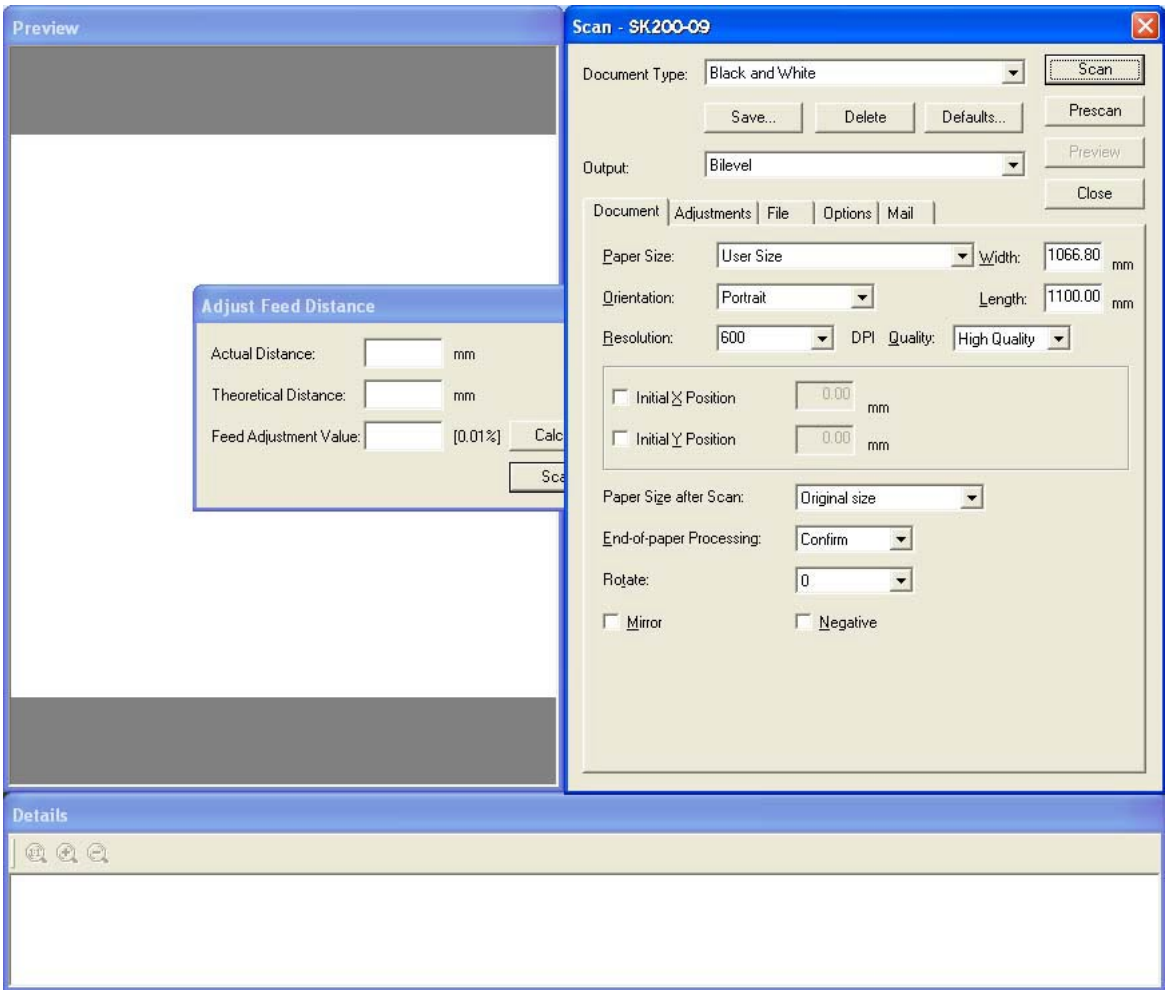
(3) Select "Adjust Feed Distance" from the "Adjust" menu.



(4) The following dialog box will appear. Correctly position the SK200 test chart on the scanner and click the "Scan" button.



(5) The following dialog box will appear. Click the "Scan" button.



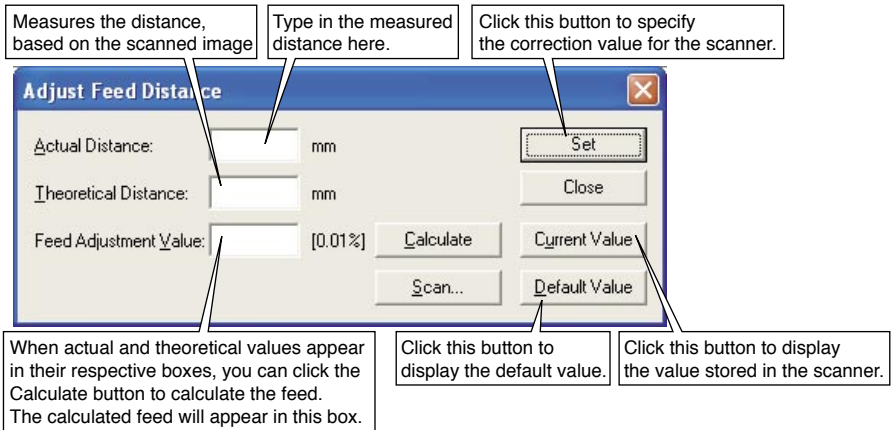
Select the following for "Document Info" and "Scan Settings":

"Document Info" Paper Size: User Size, Width: 1016, Length 1100, Resolution: 600 dpi

Document Type: Black and White

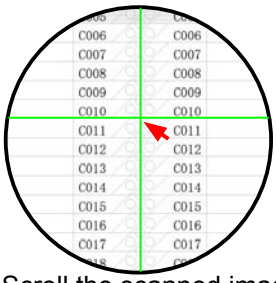
"Scan Settings" Output: Bilevel

The following dialog box appears, together with the scanned image.

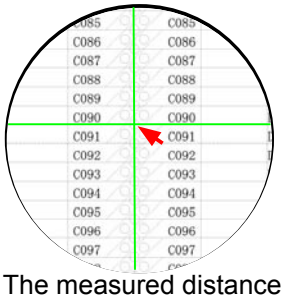

Measures the distance, based on the scanned image
Type in the measured distance here.
Click this button to specify the correction value for the scanner.
Adjust Feed Distance
Actual Distance:
mm
Set
Theoretical Distance:
mm
Close
Feed Adjustment Value:
[0.01%]
Calculate
Current Value
Scan...
Default Value
When actual and theoretical values appear in their respective boxes, you can click the Calculate button to calculate the feed. The calculated feed will appear in this box.
Click this button to display the default value.
Click this button to display the value stored in the scanner.

(6) Type the distance between C010 and C090 measured with a glass scale in the "Actual" box.

(7) Click anywhere within the "Theoretical" box and use the crosshairs cursor to click the white corner indicated by arrow "C010" on the scanned image.



(8) Scroll the scanned image to click the white corner indicated by arrow "C090" with the crosshairs cursor.



(9) The measured distance appears in the "Theoretical" box. Click the "Calculate" button.

(10) The correction value appears in the "Feed" box.
Click the "Set" button to allow the scanner to store the correction value.

(11) Place the test chart on the scanner again and click the "Scan" button.

(12) Repeat Steps 4 through 9 to perform the following calculations, based on the figures displayed in the dialog box.
[(Theoretical value - Actual value) / Actual value] x 100%
Confirm that this value is within ±0.1.

CHECKPOINT

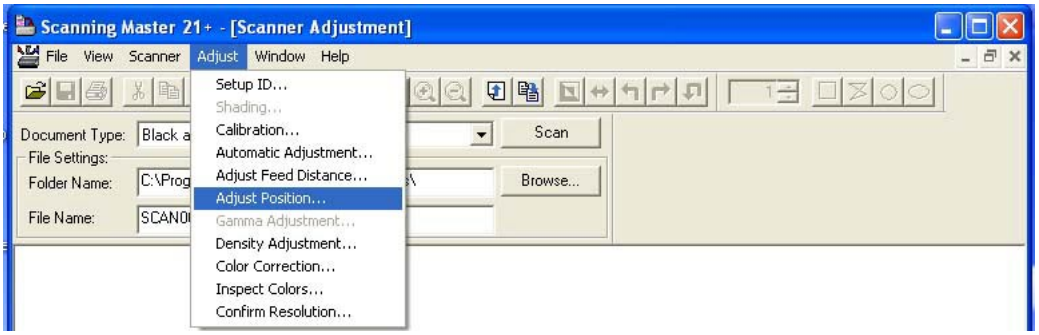
The scanner may be defective if the calculated values do not fall within the above ranges.

3. Position adjustment

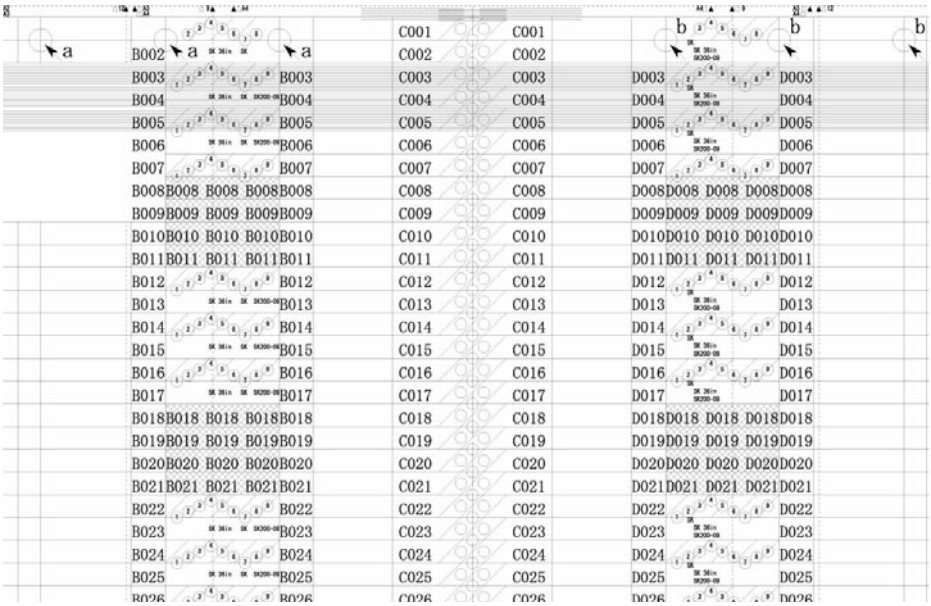
Adjusting the offset (origin)

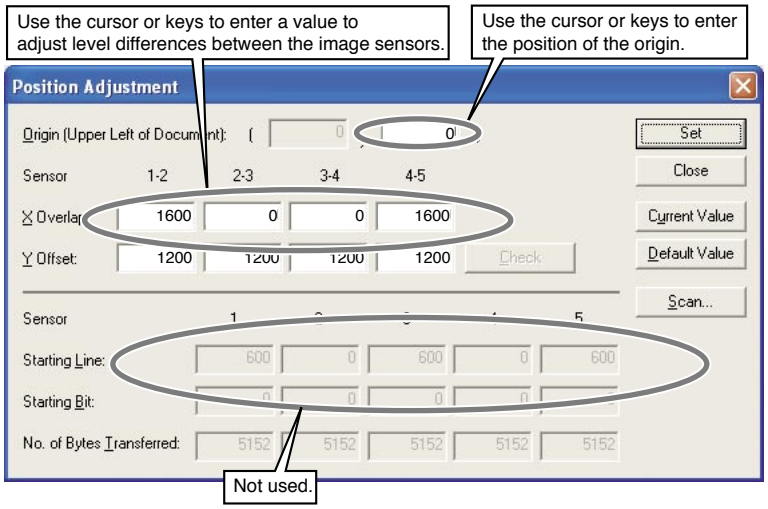
(1) Start the OPS112 software. (See p. 9-1.)

(2) Select "Adjust Position" from the "Adjust" menu.

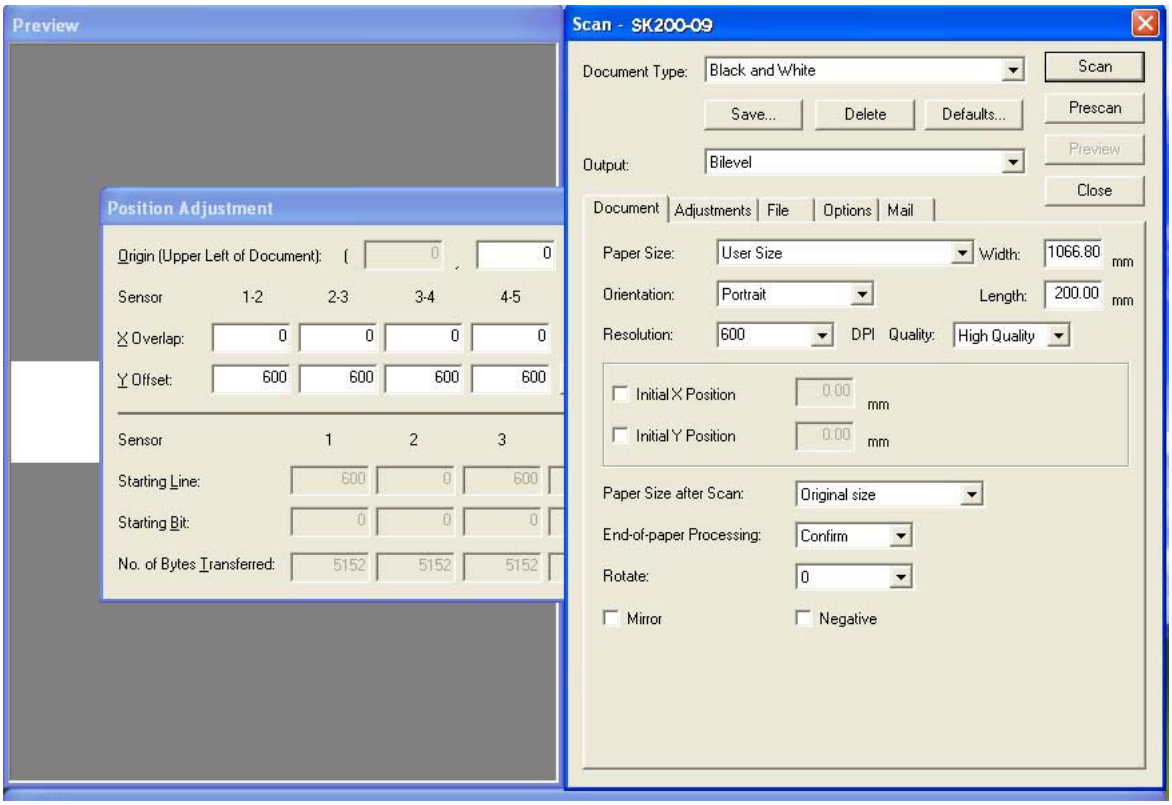


(3) The following dialog box will appear. Correctly position the offset target chart on the scanner and click the "Scan" button.





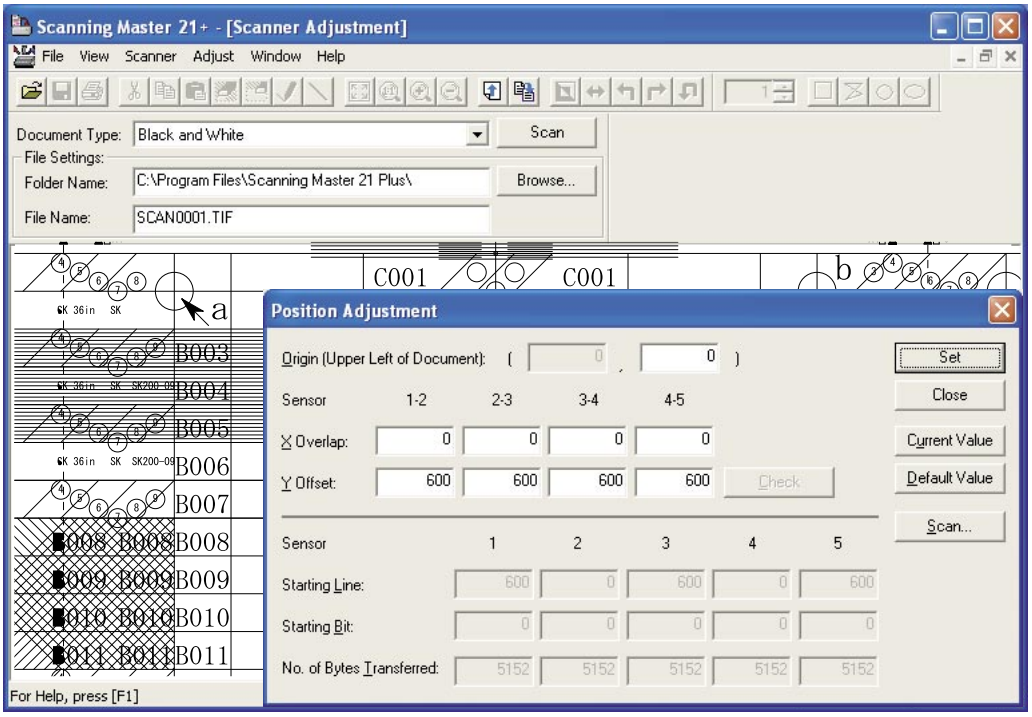
(4) The following dialog box will appear. Click the "Scan" button.



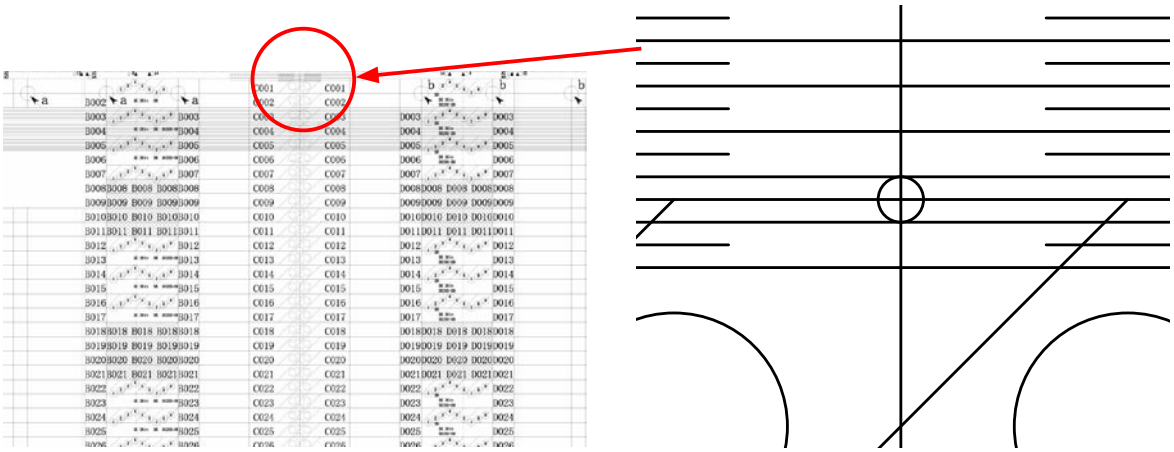
Scan conditions:

"Document Info" Paper Size: User Size, Width: 1066, Length 200, Resolution: 600 dpi
Document Type: Black and White
"Scan Settings" Output: Bilevel

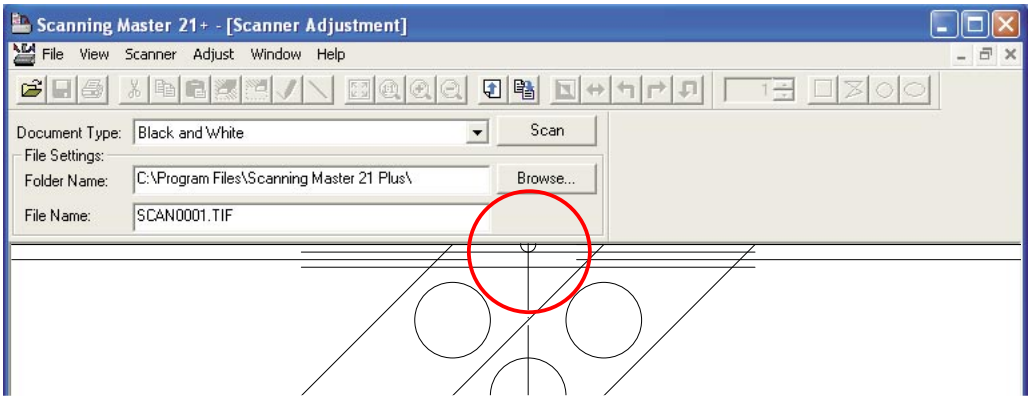
(5) A dialog box appears together with the Scanner Adjustment window, as shown below.



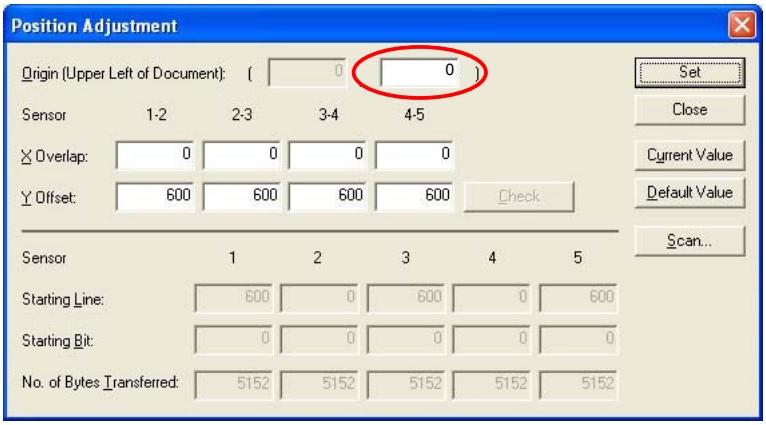
(6) Check the scanning point of the top center circle.



(7) Zoom in to the top center circle using the zoom button.
If the start point of the scanning is within the top center circle as shown below, it does not require offset adjustment.



(8) If the starting point of the scanning is outside of the top center circle, click the Origin box and then input "0".

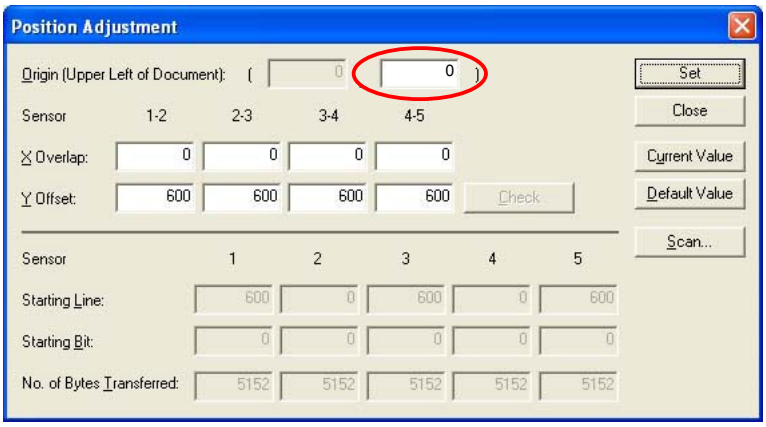

Position Adjustment
Origin (Upper Left of Document): (0 0)
Set
Close
Current Value
Default Value
Scan...
Sensor 1-2 2-3 3-4 4-5
X Overlap: 0 0 0 0
Y Offset: 600 600 600 600
Check
Sensor 1 2 3 4 5
Starting Line: 600 0 600 0 600
Starting Bit: 0 0 0 0 0
No. of Bytes Transferred: 5152 5152 5152 5152 5152

(9) Click the "Check" button, then click the "Set" button. The following dialog box will appear.
Click the "OK" button.

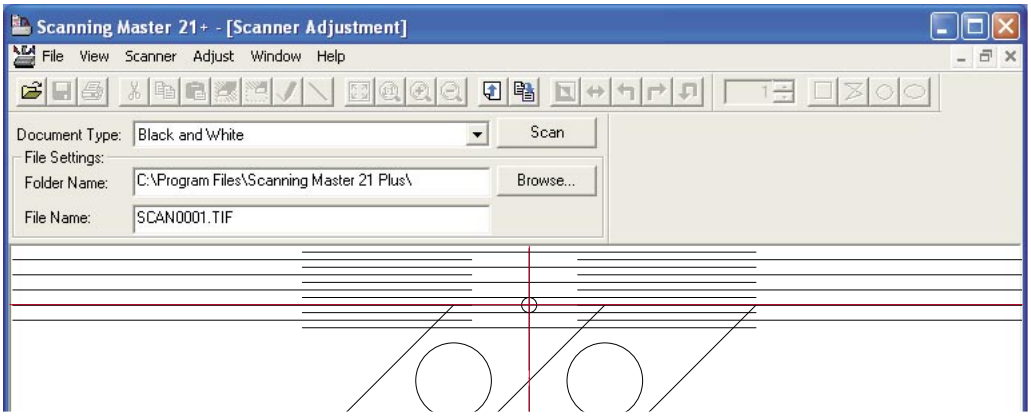
(10) Scan the offset target chart again.

(11) Zoom in to the top center circle using the zoom button.

(12) Click anywhere within the Origin box. The crosshairs cursor appears in the Scanner Adjustment window.

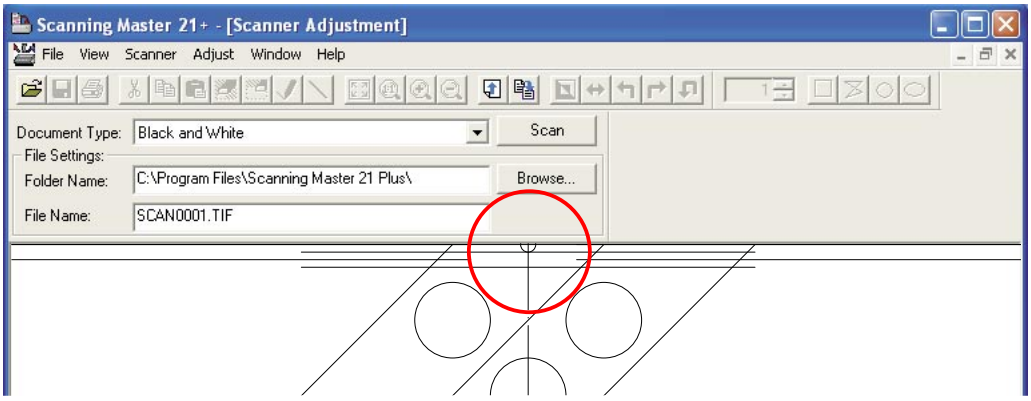

Position Adjustment
Origin (Upper Left of Document): (0 0)
Set
Close
Sensor 1-2 2-3 3-4 4-5
X Overlap: 0 0 0 0
Current Value
Y Offset: 600 600 600 600
Check
Default Value
Scan...
Sensor 1 2 3 4 5
Starting Line: 600 0 600 0 600
Starting Bit: 0 0 0 0 0
No. of Bytes Transferred: 5152 5152 5152 5152 5152

(13) When the crosshairs cursor appears in the Scanner Adjustment window, click on the center of the top center circle with the crosshairs cursor.



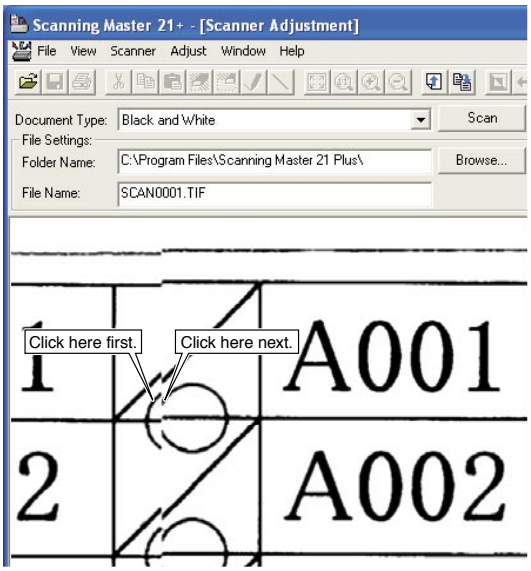
(14) Click the "Check" button, then click the "Set" button. The following dialog box will appear. Click the "OK" button.

(15) Scan the offset target chart again.
Confirm that the starting point of the scanning is within the top center circle as shown below.



Sensor joint alignment (X Overlap, Y Offset)

(1) When continuing with sensor joint alignment after offset adjustment, scroll the adjusted image to display the portion shown below.
If you start with sensor joint alignment, follow Steps (1) through (4) in "Adjusting offset (origin)" on p. 9-11 and 9-12 to display the scanned image, and scroll to display the portion shown below.



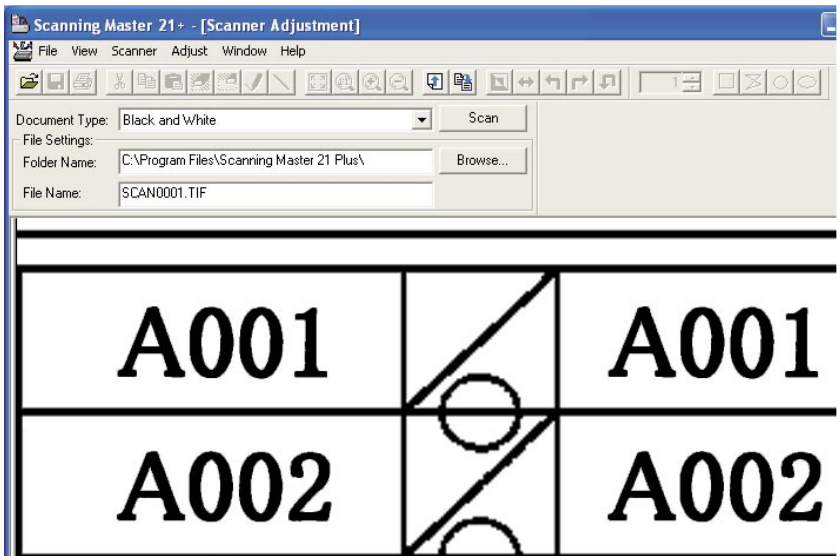
(2) The image appears as shown above, with the left-hand portion of the image misaligned with the right-hand portion. Click anywhere in the X Overlap box under "2-3." The crosshairs cursor will appear. First click a position on the left-hand portion, then click the position of the right-hand portion that corresponds to the position you selected first.

(3) Click the "Check" button first, then click the "Set" button. Follow the on-screen instruction to place the adjustment chart on the scanner again.

(4) Repeat these steps until the left-hand portion is properly aligned with the right-hand portion.
In this task, you need to adjust the X overlap and Y offset at the same time.
See "Tips for Making Fine Adjustments" on the next page if you encounter difficulties making fine adjustments.

(5) Similarly, make adjustments for 3-4, 1-2, and 4-5 in this order.
After finishing, close all the adjustment menu windows. Use the SK200 test chart to perform a normal scan, and confirm that the image appears properly.

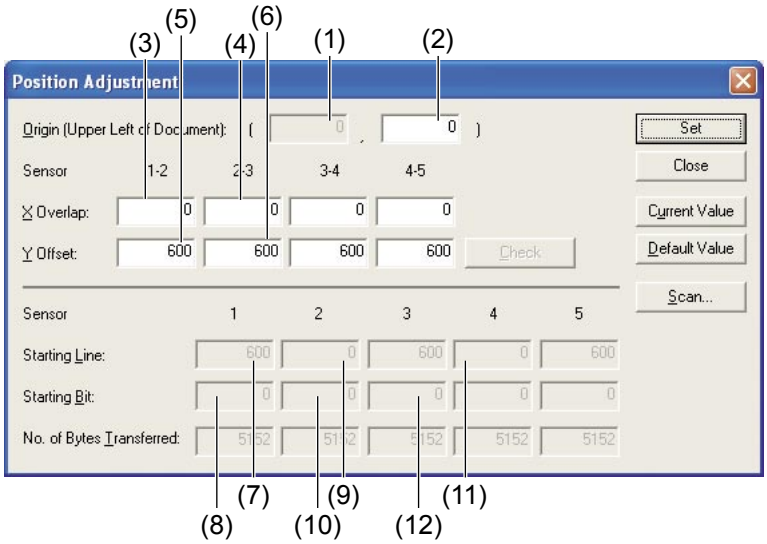
Image after adjustments



Tips for Making Fine Adjustments

• Two portions of the aligned image become misaligned during adjustments using the crosshairs cursor.
• You wish to move a portion of the image by one pixel.
• You find it difficult to find whether any portions of the image are misaligned.
• You feel that some portions of the image remain misaligned, despite efforts to correct the alignment.
In these cases, simply type in numbers to make adjustments.
In this section, we will give you a rough idea of what the numbers in the dialog box mean.
Once you become familiar with the meanings of these numbers and know which numbers to type in, you can make adjustments more accurately and quickly than by using the crosshairs cursor.

Description of the Dialog Box



(1) (2): Origin (Upper Left of Document)

The upper left corner of the scanner image currently being displayed is always set to (0, 0).
The coordinates increase as you move across and down from this point.

(3) (4): X Overlap

These boxes show the numbers of pixels by which sensor 1 and 2 (2 and 3, 3 and 4, 4 and 5) images overlap. For more overlap, increase these numbers. Reduce these numbers if some portions of images are missing due to excessive overlap to enable accurate fine adjustments.

<<Handy Tip>> Theoretically, distance accuracy in the direction of sensors (in the X direction) cannot be corrected, since it is determined based on the calibration and quality of the individual sensors. However, using the overlaps will make the image appear to be corrected.
In general, use the size change function of the application software to make this adjustment. If your customer requests extreme accuracy and if the size change function does not produce satisfactory results, you may resort to this technique.
In contrast, if the overlaps are not properly adjusted, the product specifications may not be satisfied. Check these values if you receive complaints regarding accuracy in the X direction.

(5) (6): Y Offset

Sensors 1, 3, and 5 are attached 24.5 mm behind sensors 2 and 4 in the direction of the feed.
For this reason, there is always a 24.5 mm difference in the level of the scanned image.
Thus, 24.5 mm/0.0423 mm (1 pixel) = 579 (approx.) appears in these boxes.
In practice, values slightly greater or smaller than the above number will appear due to variations in sensor position and feed.
Keep in mind that with larger values, sensor 1, 3 and 5 images will move farther up.

<<Handy Tip>> Basically, the physical positions of sensors remain unchanged, and sensors are mounted with high accuracy. Therefore, if you find that a Y offset is significantly different from "579", you may conclude that feed accuracy requires adjustment.
Conversely, if you know that the feed accuracy is correct, you may conclude that the sensor physical position is incorrect.
You can use the correction value "579" to adjust the feed so that there is no misalignment in the Y direction. This makes it possible to determine the feed, although this is not completely accurate. You may use this technique for users who do not demand high accuracy.

(7) (9) (11): Starting Line

The distances (numbers of pixels) from the document sensor to each of the image sensors in the direction of document feed are displayed in these boxes.
Subtracting value (9) from values (7) and (11) produces values (5) and (6), respectively.
If you change values (5) and (6) and press the "Check" button, values (9) and (11) will be calculated and changed automatically.

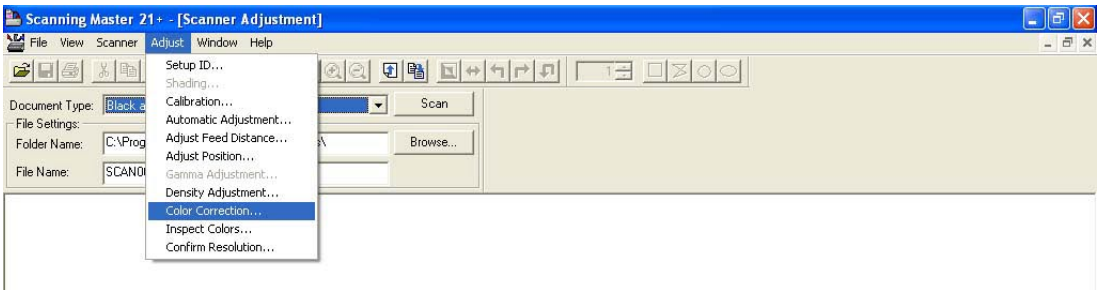
(8) (10) (12): Starting Bit

The image sensors themselves scan areas narrower than the area that can be physically scanned in order to provide a correction range.
The numbers in these boxes represent the numbers of dots from the positions at which the sensors can start their scan to those where the sensors actually start the scan.

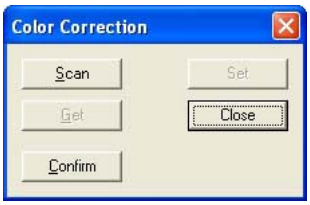
4. Color correction (using a color correction sheet)

(1) Prepare the color correction sheet.

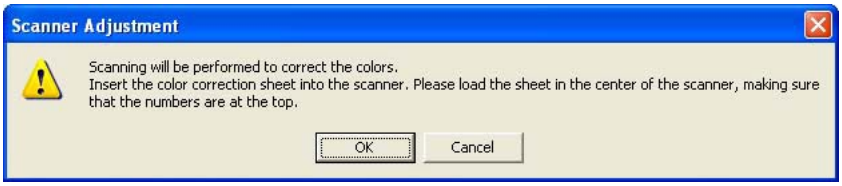
(2) Select “Color Correction” from the “Adjust” menu.



(3) Click the Scan button.



(4) The following message is displayed. Insert the color correction sheet in the scanner.


Scanner Adjustment
Scanning will be performed to correct the colors.
Insert the color correction sheet into the scanner. Please load the sheet in the center of the scanner, making sure that the numbers are at the top.
OK
Cancel

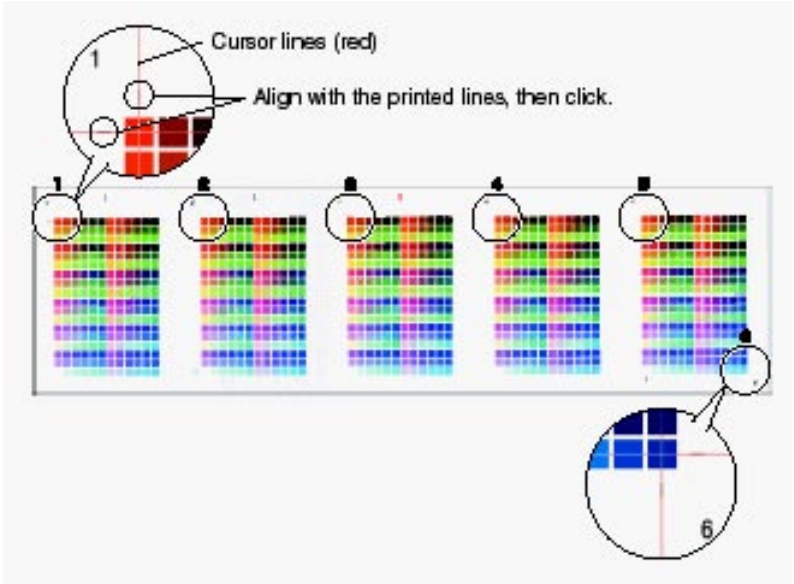
CHECKPOINT

Position the color correction sheet so that the red bar in the center of the sheet is centered in the scanner (but with the printed side down).

(5) Click the OK button to start scanning.
The scanned data is displayed when scanning is complete. Colors may differ slightly for individual sensors, but this does not indicate a defect.

(6) When the data is displayed, click the Get button.

(7) Click in the center of the color tile indicated by the numbers 1 to 6, in ascending order.
For numbers 1 to 5, click the center of the upper left tile; for number 6, click in the center of the bottom right tile. Align the cursor crosshairs with the printed lines at the sides of the tile.



CHECKPOINT

- The next reference point to be checked is displayed on the Status bar.
- If you click in error, click the Esc. key to cancel the operation and return to the immediately previous step.
- If you click on the wrong tile, color correction will not be performed correctly and the colors of the image displayed after color correction will be incorrect.

(8) After you have clicked tile number 6, click the Set button.

Click the OK button.

(9) To check the color correction results, click the Confirm button.

(10) The following message is displayed. Insert the color correction sheet in the scanner as instructed.

Scanner Adjustment
Scanning will be performed to correct the colors.
Insert the color correction sheet into the scanner. Please load the sheet in the center of the scanner, making sure that the numbers are at the top.
OK
Cancel

CHECKPOINT

Position the color correction sheet so that the red bar in the center of the sheet is centered in the scanner (but with the printed side down).

(11) Click the OK button to start scanning.
After scanning has been completed, an enlarged view of the color-corrected data is displayed.

(12) Click the Fit icon to display the entire image, and check whether there is any discrepancy in color. If there is no discrepancy, color correction is complete. Click the Close button.

CHECKPOINT

If there is still some color discrepancy after performing Color Correction, repeat steps (7) through (12).

9.5 Downloading Firmware

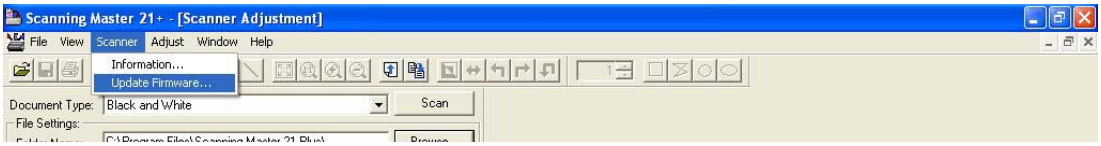
This section describes how to download firmware (system programs) via the USB interface to the flash memory provided on the data controller board, to which the boot program has been downloaded.

1. Items required to download firmware

• SK200SP.X file (Firmware)
  Use version 1.0 series for the SK200-06 (old main board).
  Use version 2.0 series for the SK200A-06 (new main board).
  Do not install the version 2.0 series to the SK200-06 (old main board).
  Do not install the version 1.0 series to the SK200A-06 (new main board).
• SK200-09 scanner
• PC (Windows 2000/XP and an operating environment that provides USB 2.0 compatibility)
• OPS112 (Scanning Master 21+ Ver 6.40 or later)
• USB interface cable

2. Procedure

(1) Use the USB cable to connect the SK200 and PC.
(2) Turn on the power for your PC.
(3) Run the Scanning Master 21+ (OPS112) in the adjustment mode. (see Section 9.1).
(4) When OPS112 starts, follow the steps given below to download the firmware.
(5) Select "Update Firmware" from the "Scan" menu to display the Download dialog box.



(6) Insert the floppy disk containing the firmware (filename: SK200SP.X) into the floppy disk drive, click the "View" button on the Download dialog box, select the floppy disk, and click the "OK" button.
(7) Click the "Start" button to begin downloading.
(8) After the download is complete, a message will appear. At this time, the paper and error LEDs on the scanner should start flashing simultaneously.
  After confirming this, turn off the power (disconnect the AC cable from the power inlet of the SK200).

10. TROUBLESHOOTING

Cause	Checkpoint	Remedy
Lamps on the control panel remain unlit.	Confirm that the power switch has been switched on.	Switch on the power switch.
	Confirm that the power cable is properly connected.	Connect the cable properly.
	Confirm that the cable is properly connected to the control device.	Connect the cable properly.
	Confirm that the power outputs (+24 V, +5 V, +3.3 V) are appropriate.	Check the power supplies and replace if necessary.
	Other	Replace the control panel. Replace the data controller board.
The document is not scanned, although it is moved to the scanning position.	Confirm that the PAPER LED is lit.	Check the document detection photosensor.
	Confirm that the USB cable is properly connected.	Connect the cable properly.
	Confirm that the USB cable is properly connected within the scanner.	Connect the cable properly.
	Confirm that the appropriate model has been specified.	Specify the correct scanner model.
	Other	Replace the main control board.
The document is not transported properly.	Check for foreign objects in the document scanning section.	Open the center cover and remove foreign objects.
	Confirm that the roller rotates when you press a control key.	Check for anomalies around the control boards.
	Confirm that the feed motor is running.	Check for anomalies around the motor.
	Confirm that +24 V is output.	Check the power supply and replace if necessary.
	Other	Replace the control boards. Replace the data control board.
The scanned data is completely black.	Confirm that an appropriate white correction value has been specified.	Perform Calibration (white correction).
	Confirm that the image sensor cables are properly connected.	Confirm that the image sensor cables are properly connected, with no broken wires.
	Confirm that the image sensor LEDs are lit.	Check the +5 V power supply and replace it if it is faulty. Replace the data controller board. Replace the CIS board. Replace the image sensors.
	Confirm that an appropriate value is specified for “Intensity (Brightness)” in Scanning Master 21+.	Adjust “Intensity (Brightness)” in Scanning Master 21+.

Cause	Checkpoint	Remedy
The scanned drawing has undesired black lines.	Clean the contact glass plates and replace if necessary.	Clean the contact glass plates and replace if necessary. Clean the image sensors.
	Confirm that calibration (white correction) has been properly performed.	Perform calibration from the beginning (white correction).
	Check the document hold-down plate for stains.	Clean the feed rollers.
	Check whether the problem persists after cleaning and adjustments.	Replace the image sensors.
The scanned drawing has undesired white lines.	Check the contact glass plates for dust and damage.	Clean the contact glass plates and replace if necessary.
	Confirm that calibration (white correction) has been properly performed.	Perform calibration from the beginning (white correction).
Part of the scanned drawing is missing (the scanned drawing is horizontally compressed).	Confirm that the sensor X overlaps and Y offsets are appropriate.	Align the sensor joints.
Part of the scanned drawing is overlapped.	Confirm that the sensor X overlaps and Y offsets are appropriate.	Align the sensor joints.
The image quality is poor.	Check whether any of the contact glass plates is dirty.	Use purified water or alcohol to clean the contact glass plate(s). (Do not use chemical solvents.)
	Confirm that the image resolution is appropriate.	Select an appropriate resolution.
The PC does not detect the scanner.	Confirm that the scanner has been turned on.	Turn on the scanner.
	Confirm that the PC has detected the USB properly.	Reattach the USB cable, set it up, and reinstall the USB driver.
	Check the cable for broken wires, shorting, and bent connector pins.	Replace the cable.
	Confirm that the power supply for the scanner unit functions properly.	Check the supply voltage and replace the power supply as necessary.
When placed on the scanner, the paper is moved beyond the scanning section and drops to the back of the scanner.	The media sensors do not function properly.	Clean the media sensor. Check the sensor cable for contact with other cables. Replace one or both media sensors.
Paper jam occurs.	Check the transfer section for foreign objects.	Remove foreign objects.
There is a difference in color density between the right- and left-hand portions of the document scanned in grayscale.	The sensor color density has not been properly corrected.	Adjust color density.

11. OPTION AND CONSUMABLES

11.1 Optional Item

Code	Item Name
ST0064	High stand

11.2 Consumables

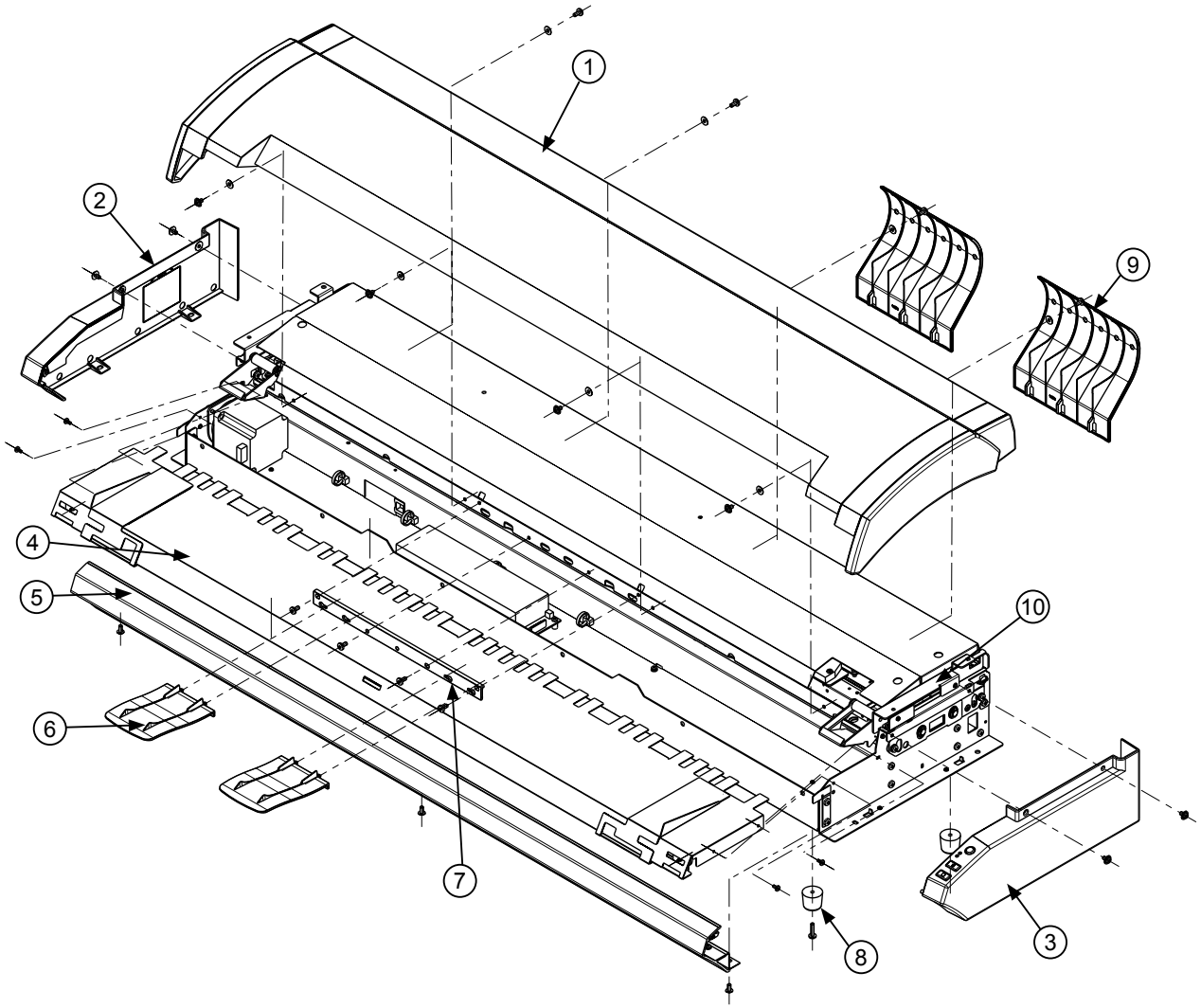
Code	Item Name
IS0907	Carrier Sheet (A0)
IS0908	Carrier Sheet (A1)
IS0917	Calibration Sheet (42 inches)
EM-CP	Cleaning paper (50 sheets)

12. PARTS LISTS

12.1 Outer Casing

No.	Part No.	Part name	Description	Q'ty	Remarks
1	641700030	Top Cover	COV-MD	1	
2	794200721	Left Side Cover Assembly		1	
3	794200719	Right Cover Assembly		1	
4	794200720	Front Guide Assembly		1	
5	794200722	Front Cover Assembly		1	
6	641700130	Anti-curling Guide		2	
7	641700110	Guide Holder Plate		1	
8	363023201	Rubber Foot	TK2320	4	
9	641701000	Rear Guide		2	
10	301504001	Flap Stay		1	

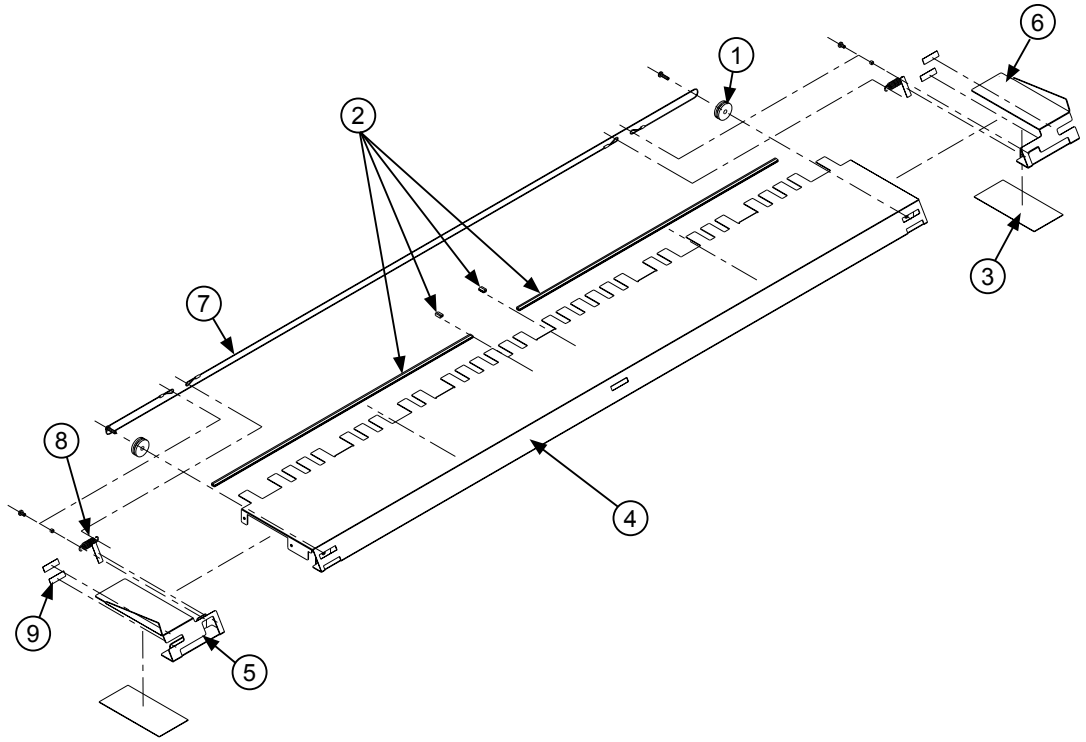
Outer Casing



12.2 Front Guide

No.	Part No.	Part name	Description	Q'ty	Remarks
1	350195011	Front Guide Pulley		2	
2	361204001	Front Guide Edge Cover		4	
3	641300382	Felt L100	Felt 100	2	
4	641700202	Front Guide		1	
5	641700231	Left Media Guide		1	
6	641700241	Right Media Guide		1	
7	641700251	Wire, Front Guide		2	
8	641700261	Spring, Front Guide		2	
9	649202740	Felt S	Felt S	6	

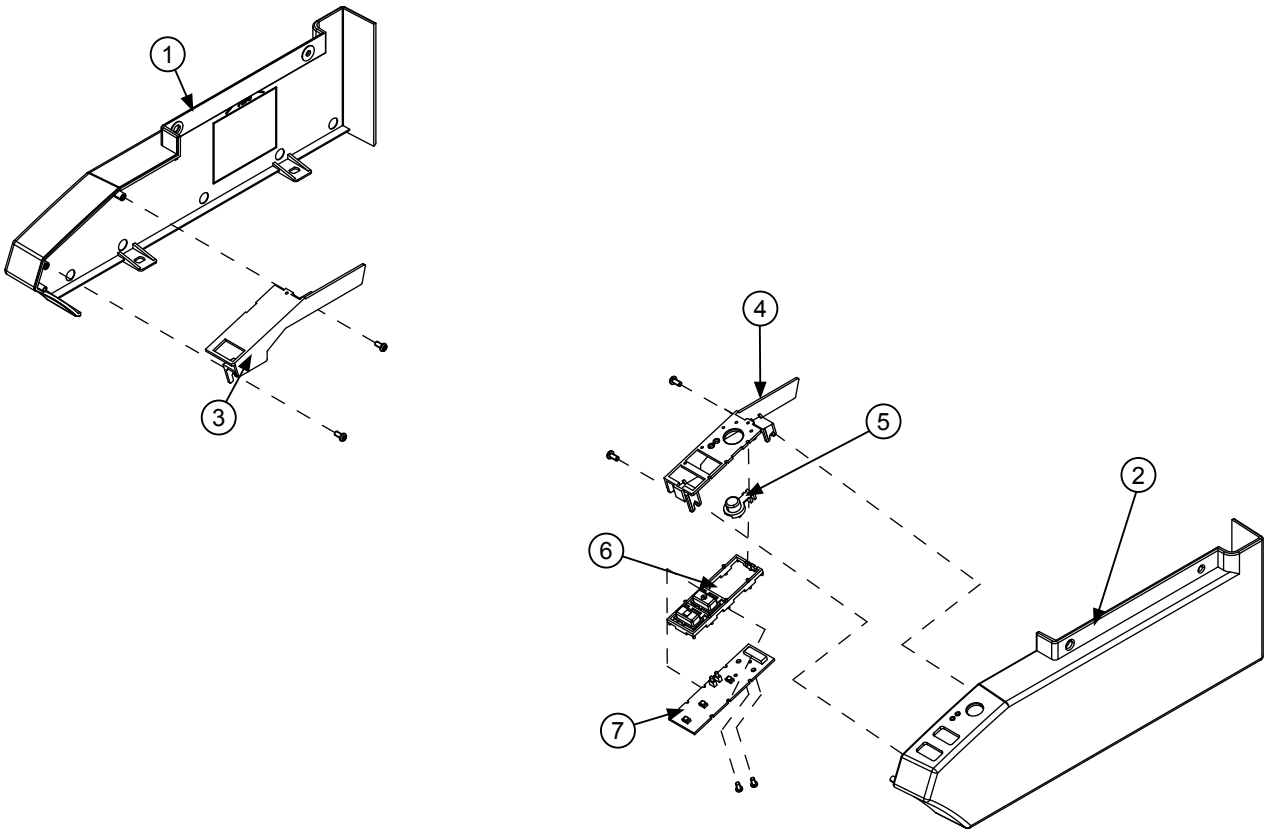
Front Guide



12.3 Side Cover

No.	Part No.	Part name	Description	Q'ty	Remarks
1	640615030	Left Side Cover		1	
2	640615020	Right Side Cover		1	
3	641700790	Holder, Left		1	
4	641700780	Holder, Right		1	
5	641700070	Key Top, Power		1	
6	641700760	Key Top, E/S		1	
7	774061267	Control Panel Board		1	

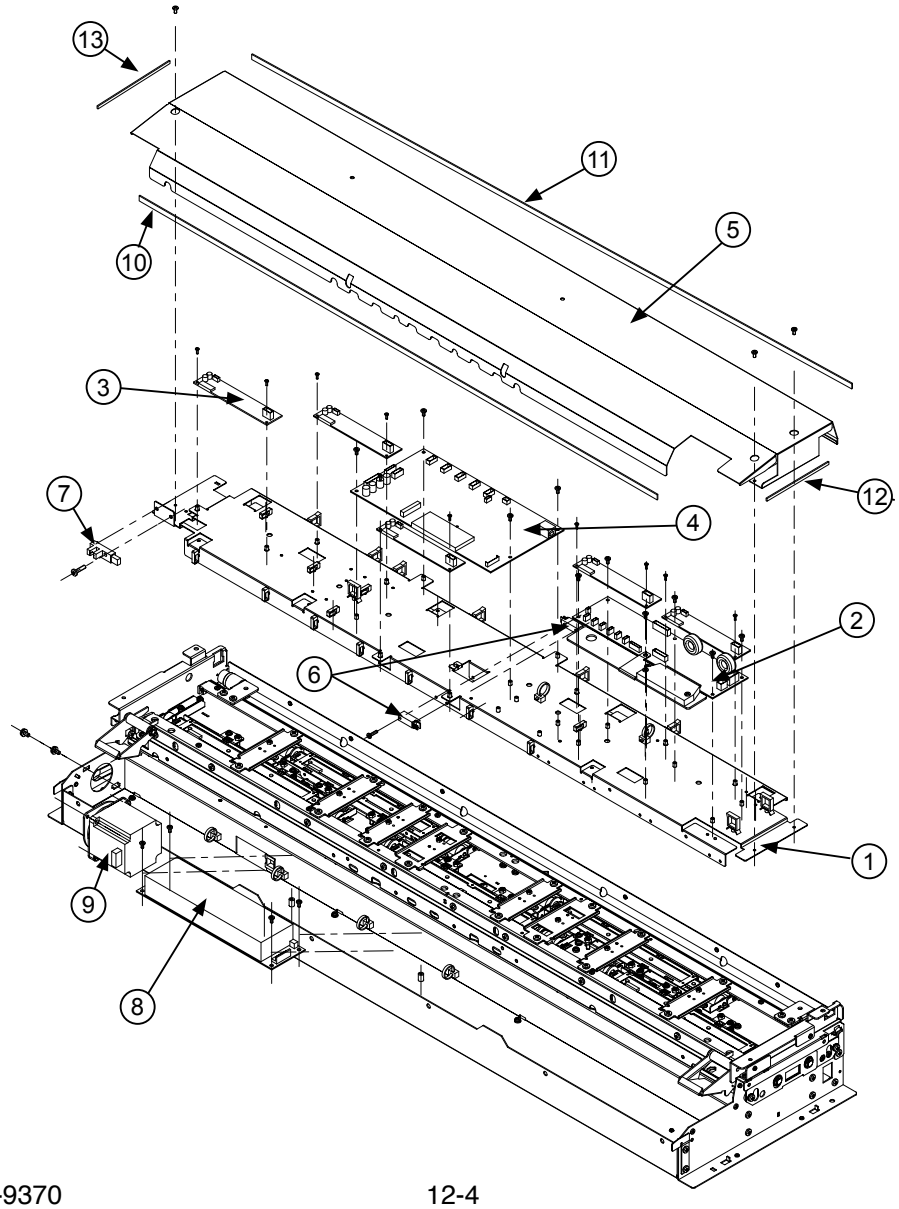
Side Cover



12.4 Main Frame

No.	Part No.	Part name	Description	Q'ty	Remarks
1	649202690	Board Base Chassis		1	
2	774060263	CIS Power Board	CIS Power Board for SK200-09	1	SK200-09
	794050714	CIS Power Board, SVC_Power_A5	CIS Power Board for SK200-09-A	1	SK200-09-A
3	774060261	CIS Controller Board	CIS Controller Board for SK200-09	5	SK200-09
	794050713	CIS Controller Board, SVC_CIS_A5	CIS Controller Board for SK200-09-A	5	SK200-09-A
4	774061500	Main Board	Data Controller Board for SK200-09	1	SK200-09
	794050710	Main Board, SVC_SK_Main_A5	Data Controller Board for SK200-09-A	1	SK200-09-A
5	649201850	Shield Cover		1	
6	500052659	Media Sensor	PS117ND1	2	
7	500052694	Cover Sensor	LG217L-3	1	
8	562500006	Power Supply Unit	BWC24SX-U-E (E)	1	
9	774060204	Feed Motor		1	
10	694600440	Gasket, Front		1	
11	694600430	Gasket, Rear		1	
12	694600410	Gasket, Right		1	
13	694600400	Gasket, Left		1	

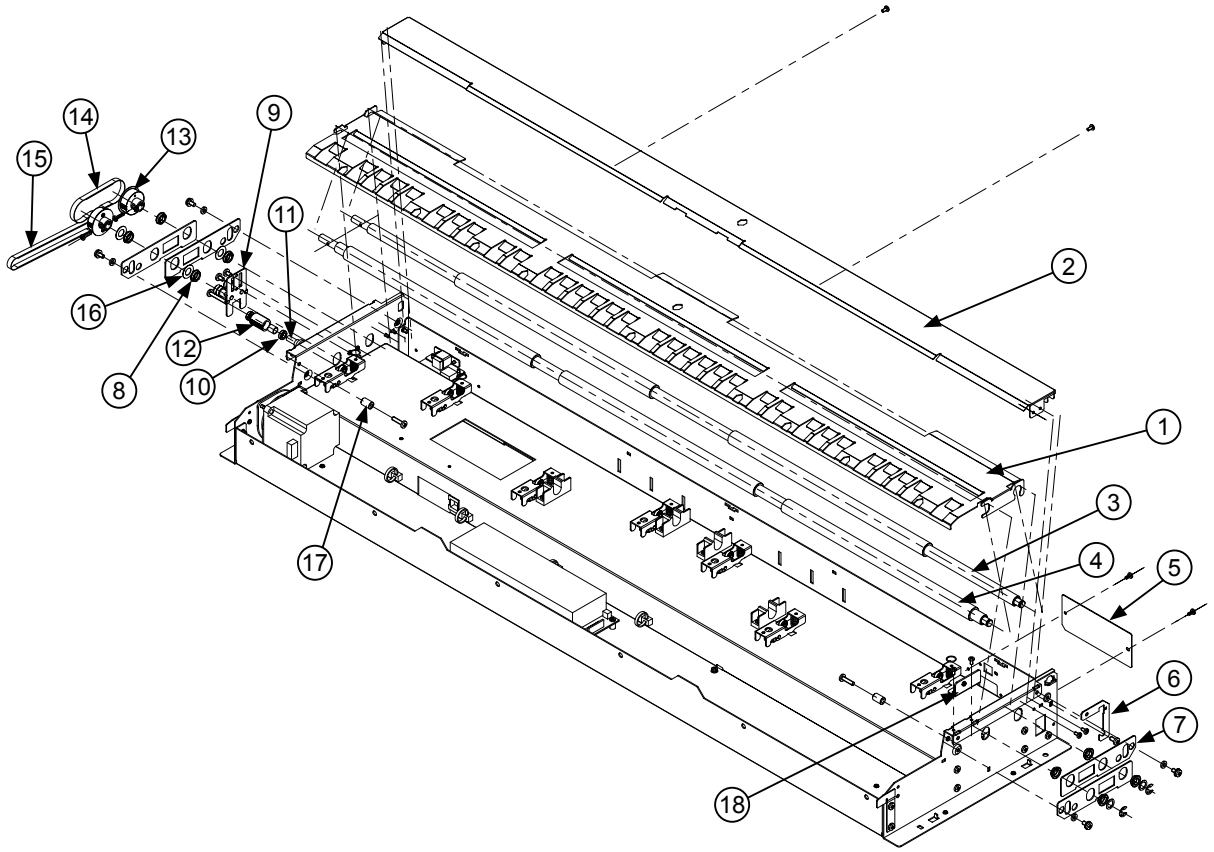
Main Frame



12.5 Feed Section

No.	Part No.	Part name	Description	Q'ty	Remarks
1	774060201	Center Media Guide		1	
2	649201642	Rear Media Guide		1	
3	649200135	Rear Feed Roller		1	
4	649200125	Front Feed Roller		1	
5	641700280	Blindfold Plate		1	
6	649201830	Damper Reinforcing Plate		1	
7	649201830	Twin Link Plate		4	
8	311012820	Bearing, MF128ZZMC3PS2S		8	
9	774060202	Tension Bracket		1	
10	310010620	Bearing, MR106ZZMC3PS2S		4	
11	649200140	Pulley Stud		1	
12	649200180	Pulley 22		1	
13	774060203	Feed Roller Pulley		2	
14	378012591	Feed Roller Drive Belt	60S2M250	1	
15	378014221	Motor Drive Belt	60S2M284	1	
16	649201110	Feed Roller Washer		4	
17	649202780	Cover Lock Stud		2	
18	649200990	Stay Bracket		1	

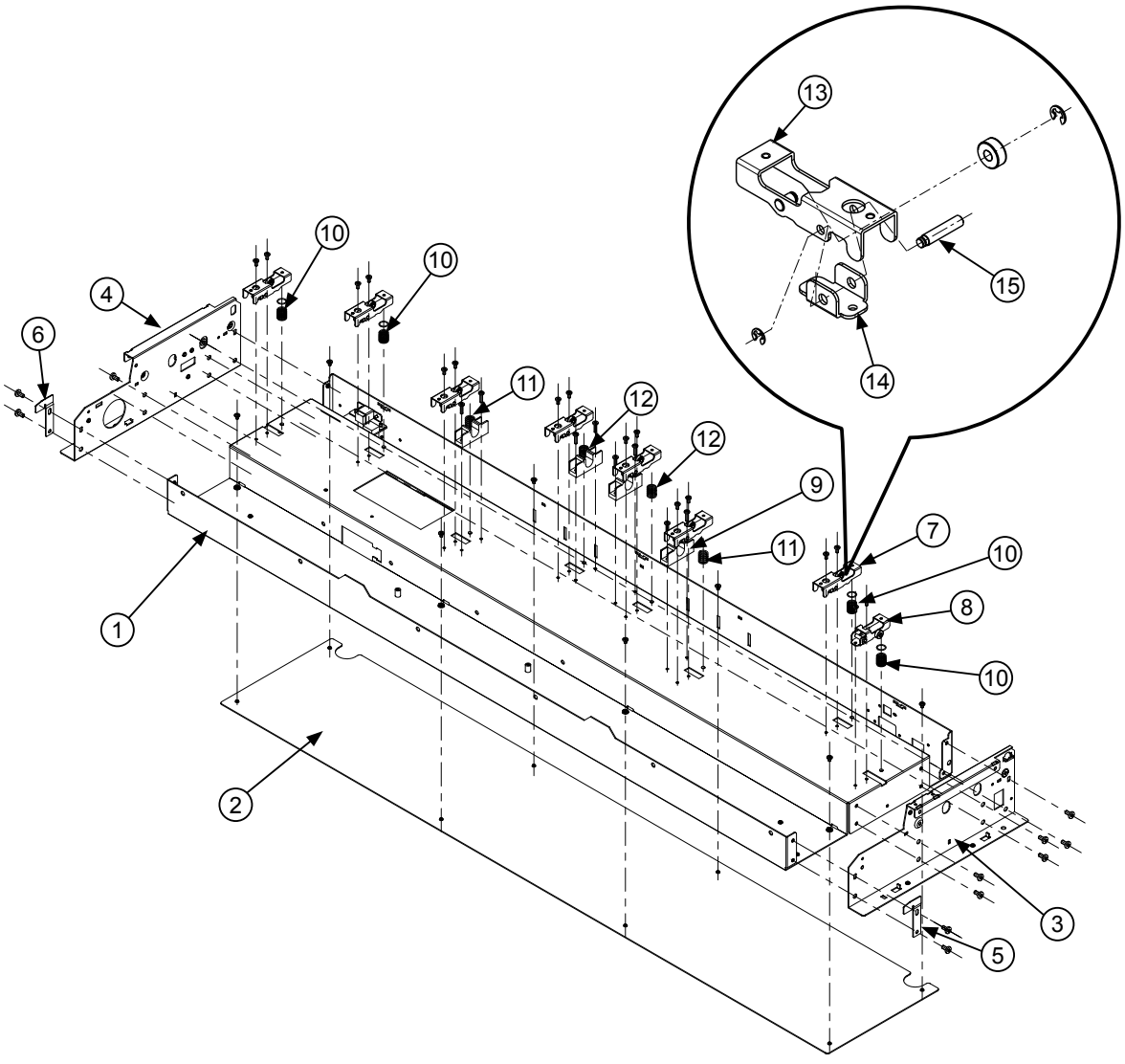
Feed Section



12.6 Bottom Chassis

No.	Part No.	Part name	Description	Q'ty	Remarks
1	649201962	Bottom Chassis		1	
2	649201950	Chassis Reinforcing Plate		1	
3	649201942	Right Side Plate		1	
4	649201932	Left Side Plate		1	
5	649201870	Right Side Cover Bracket		1	
6	649201860	Left Side Cover Bracket		1	
7	774061153	Pressure Arm Assy		7	
8	774060302	Right Pressure Arm Assy		1	
9	649201820	Feed Roller Holder		4	
10	380111241	Spring, AP110-024-0.9	Left and Right Side Spring	4	
11	380111251	Spring, AP110-025-1.0	Front Center Spring	2	
12	380111201	Spring, AP110-020-1.2	Rear Center Spring	2	
13	649200202	Pressure Arm		7	
14	649200221	Pressure Arm Base		7	
15	649200210	Pressure Arm Shaft		7	
16	309011003	Pressure Arm Roller	10SRF41Z	7	

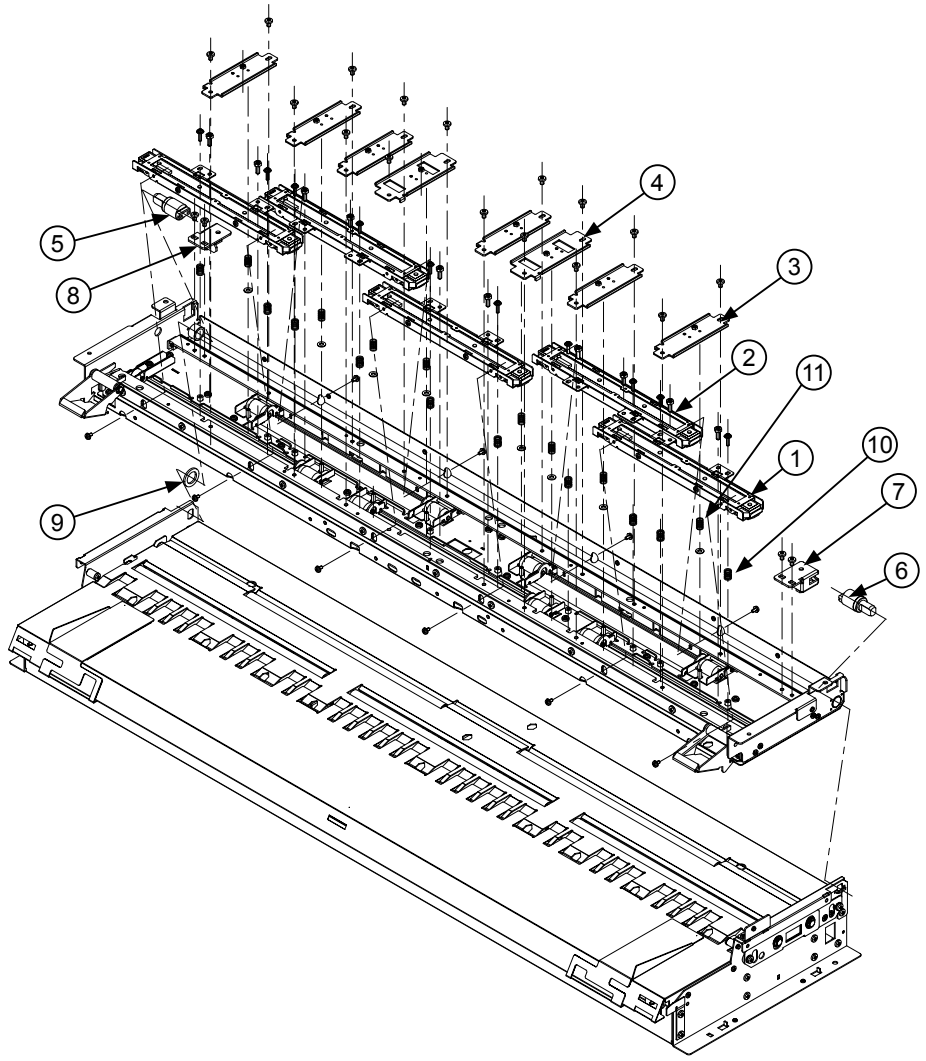
Bottom Chassis



12.7 Upper Section 1

No.	Part No.	Part name	Description	Q'ty	Remarks
1	774061952	CIS Sensor Front Unit Assy (Rank C)	Includes the Contact Glass Plate Assy (Select the same rank of sensor that is used in your scanner.)	3	
	774061953	CIS Sensor Front Unit Assy (Rank D)			
	774061956	CIS Sensor Front Unit Assy (Rank G)			
	774061957	CIS Sensor Front Unit Assy (Rank H)			
2	774061972	CIS Sensor Rear Unit Assy (Rank C)		2	
	774061973	CIS Sensor Rear Unit Assy (Rank D)			
	774061976	CIS Sensor Rear Unit Assy (Rank G)			
	774061977	CIS Sensor Rear Unit Assy (Rank H)			
3	649202561	Spring Holder Plate		6	
4	649202771	Spring Holder Plate L		2	
5	305704003	Left Damper	FYN-N1-L303	1	
6	305704002	Right Damper	FYN-N1-R303	1	
7	649200812	Right Damper Holder		1	
8	649200823	Left Damper Holder		1	
9	649200980	Spacer		1	
10	380108201	Front CIS Sensor Assy Spring	AP080-020-0.8	10	
11	380107231	Rear CIS Sensor Assy Spring	AP075-023-0.7	8	

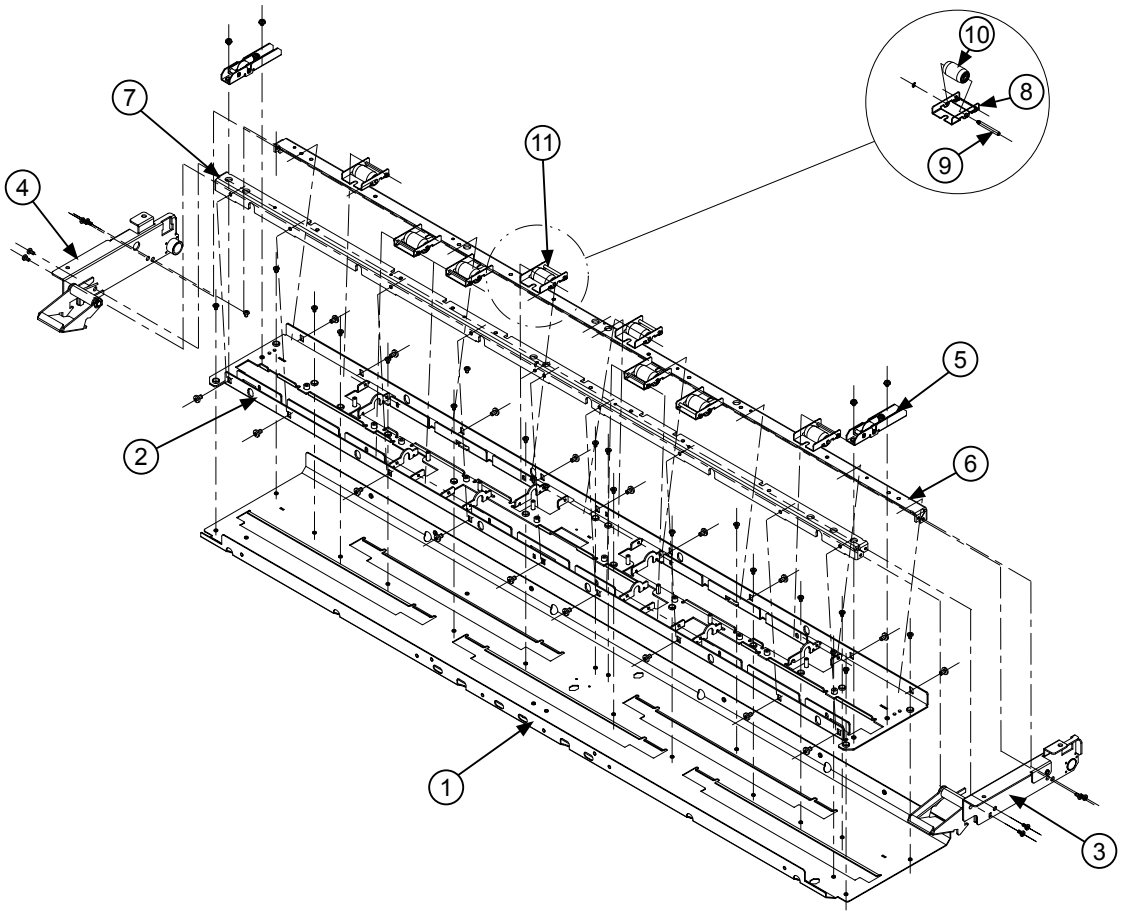
Upper Section 1



12.8 Upper Section 2

No.	Part No.	Part name	Description	Q'ty	Remarks
1	649202540	Upper Media Guide		1	
2	649202360	CIS Base Chassis		1	
3	774060210	CIS Base Right Side Frame		1	
4	774060211	CIS Base Left Side Frame		1	
5	774061154	Outer Pinch Roller Assy		2	
6	649202750	Rear Pinch Roller Frame		1	
7	649202350	Front Pinch Roller Frame		1	
8	649202570	Pinch Roller Bracket		8	
9	649202660	Pinch Roller Shaft		8	
10	649201154	Pinch Roller	GAP Roller 29	8	
11	649202580	Pinch Roller Pivot Shaft		8	

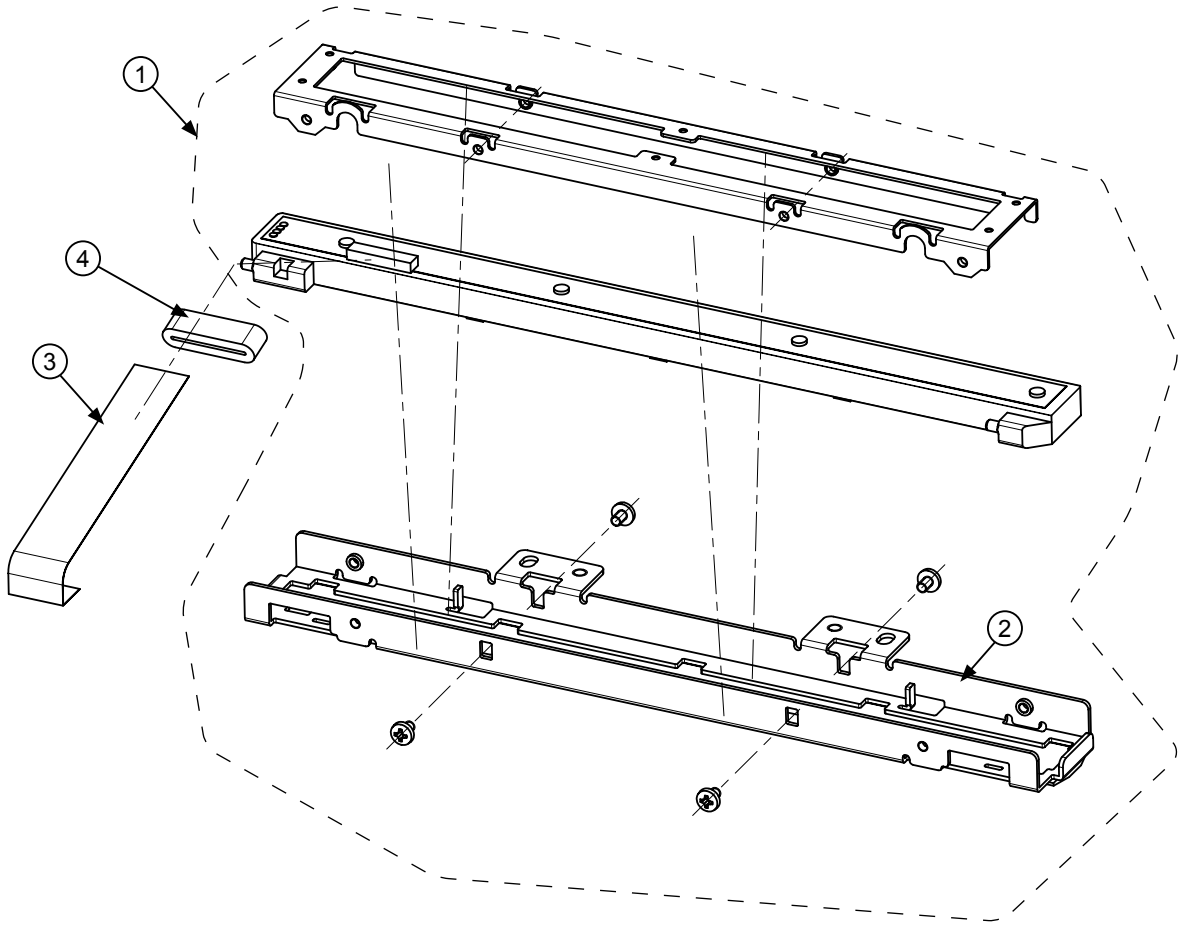
Upper Section 2



12.9 Front CIS Sensor Unit Assembly

No.	Part No.	Part name	Description	Q'ty	Remarks
1	774061952	CIS Sensor Front Unit Assy (Rank C)	Includes the Contact Glass plate Assy (Select the same rank of sensor that is used in your scanner.)	1	
	774061953	CIS Sensor Front Unit Assy (Rank D)			
	774061956	CIS Sensor Front Unit Assy (Rank G)			
	774061957	CIS Sensor Front Unit Assy (Rank H)			
2	774061940	Contact Glass plate Front Assy		1	
3	694450111	FPC Cable CS20		1	Short (50 mm)
	694600320	FPC Cable 460032			Long (100 mm)
4	500051529	Core	E04FA270218080	1	

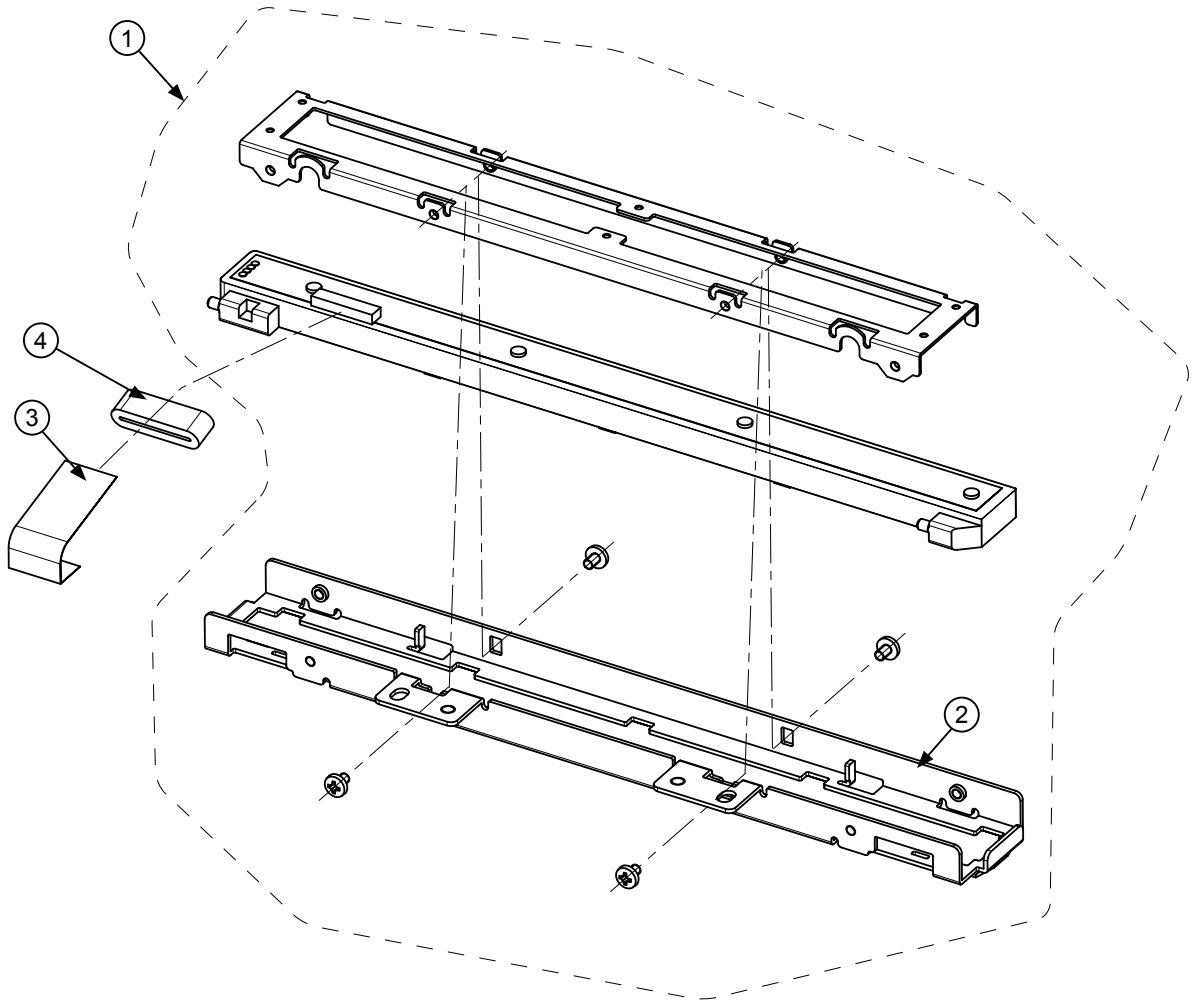
Front CIS Sensor Unit Assembly



12.10 Rear CIS Sensor Unit Assembly

No.	Part No.	Part name	Description	Q'ty	Remarks
1	774061972	CIS Sensor Rear Unit Assy (Rank C)	Includes the Contact Glass plate Assy (Select the same rank of sensor that is used in your scanner.)	1	
	774061973	CIS Sensor Rear Unit Assy (Rank D)			
	774061976	CIS Sensor Rear Unit Assy (Rank G)			
	774061977	CIS Sensor Rear Unit Assy (Rank H)			
2	774061941	Contact Glass Plate Rear Assy		1	
3	694450111	FPC Cable CS20		1	Short (50 mm)
4	500051529	Core	E04FA270218080	1	

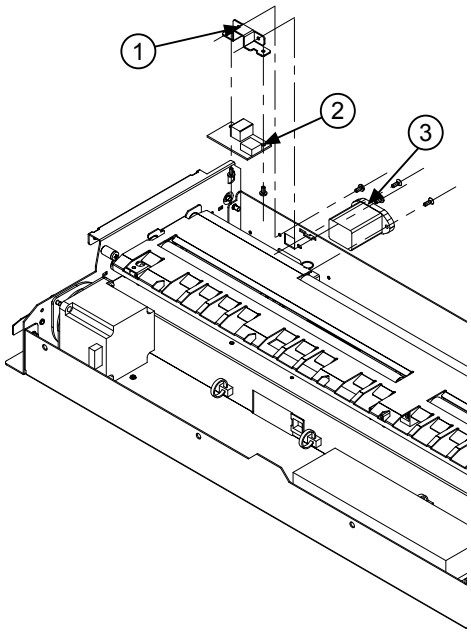
Rear CIS Sensor Unit Assembly



12.11 Inlet

No.	Part No.	Part name	Description	Q'ty	Remarks
1	641700211	USB Relay Board Bracket		1	
2	774061268	USB Relay Board		1	
3	500051793	Inlet	FN-922R-3-06	1	

Rear CIS Sensor Unit Assembly



12.12 Other Parts

Standard Accessories

No.	Part No.	Part name	Description	Q'ty	Remarks
1	562500003	USB Cable	CBL0106-ACL2-29M	1	
2	649202980	SP200W-CDM01M	CD-ROM	1	SP200W
	649203010	SK200-CDM01M	CD-ROM		SK200-09
3	649202210	Calibration Sheet Assembly	36 Shade Assy-RMD	1	
4	641700131	Anti-curling Guide	GUIDE-F-W	2	Front
5	641701001	Rear Guide	GUIDE-PAPER	2	Rear
6	641700501	Cleaning-Kit		1	
7	649202800	SP Setup Manual		1	SP200W
8	649202810	SP Quick Manual		1	SP200W
9	649202820	JW Quick Manual		1	SP200W
10	649202830	SK Quick Manual		1	SP200W

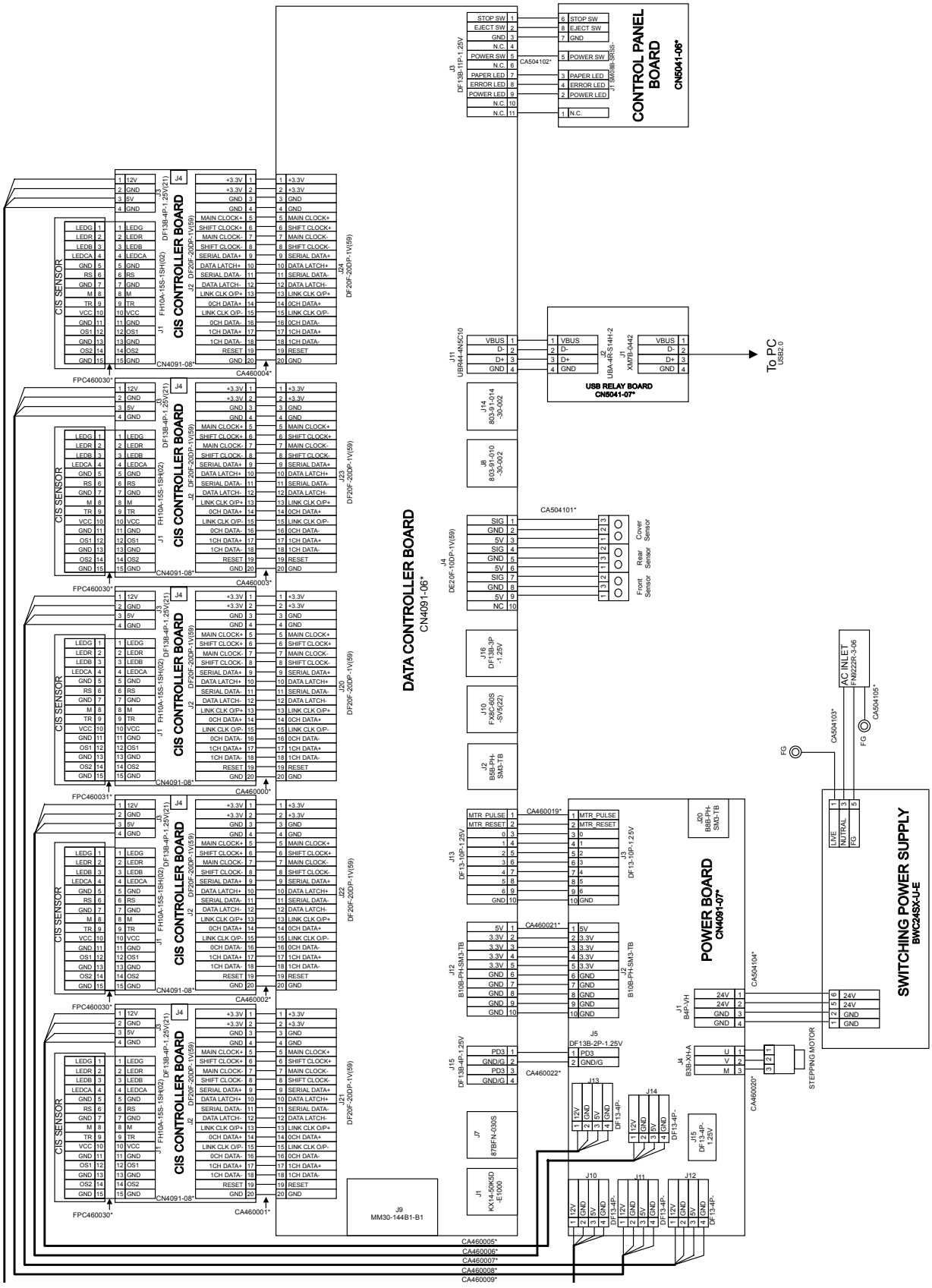
Packing Box

No.	Part No.	Part name	Description	Q'ty	Remarks
1	649202310	SK200 Packing Box Assembly		1	
2	649202320	Packing Label		1	

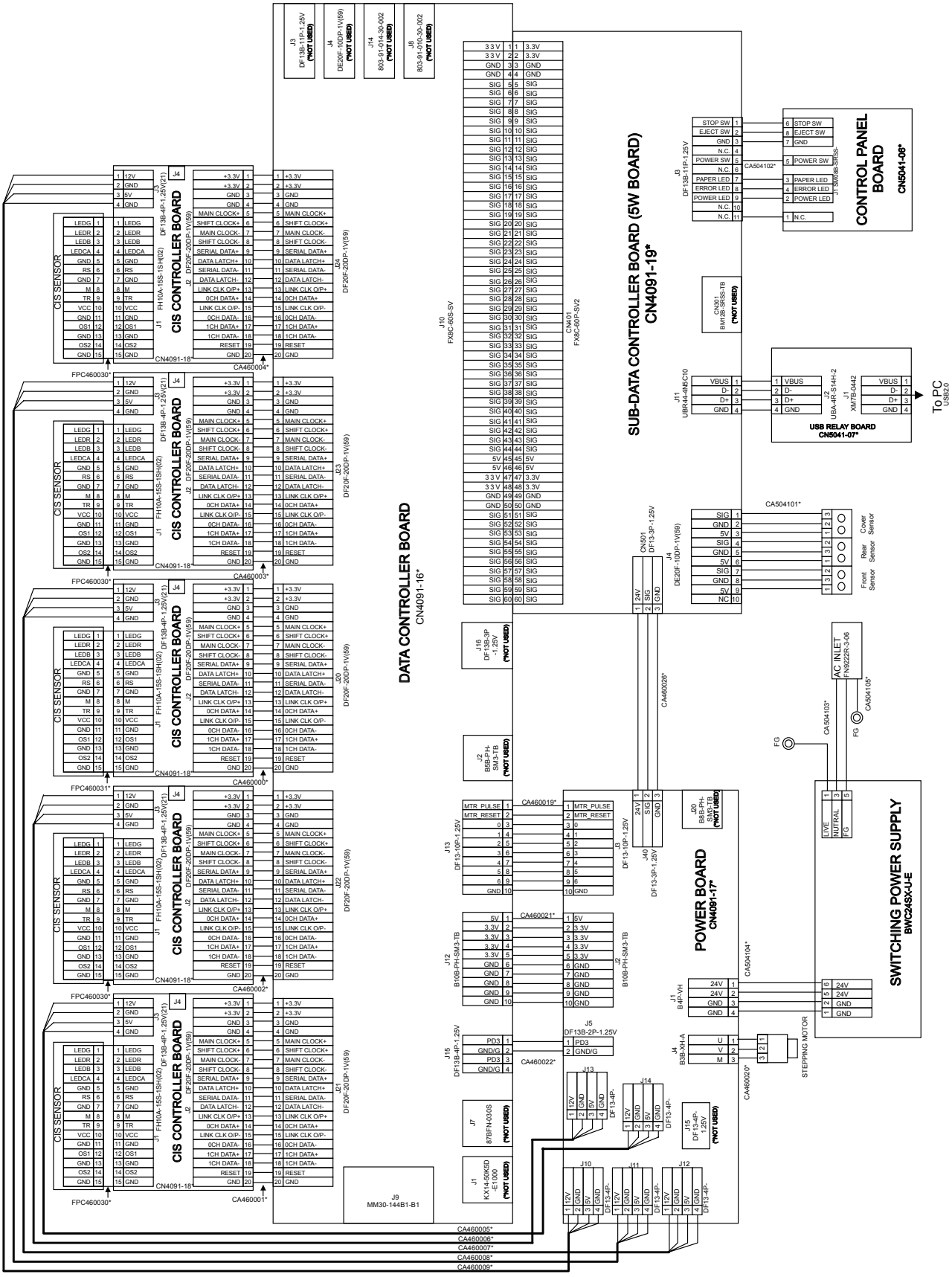
13. BLOCK DIAGRAM AND CIRCUIT DIAGRAMS

13.1 Block Diagram

13.1.1 Block Diagram for SK200-09



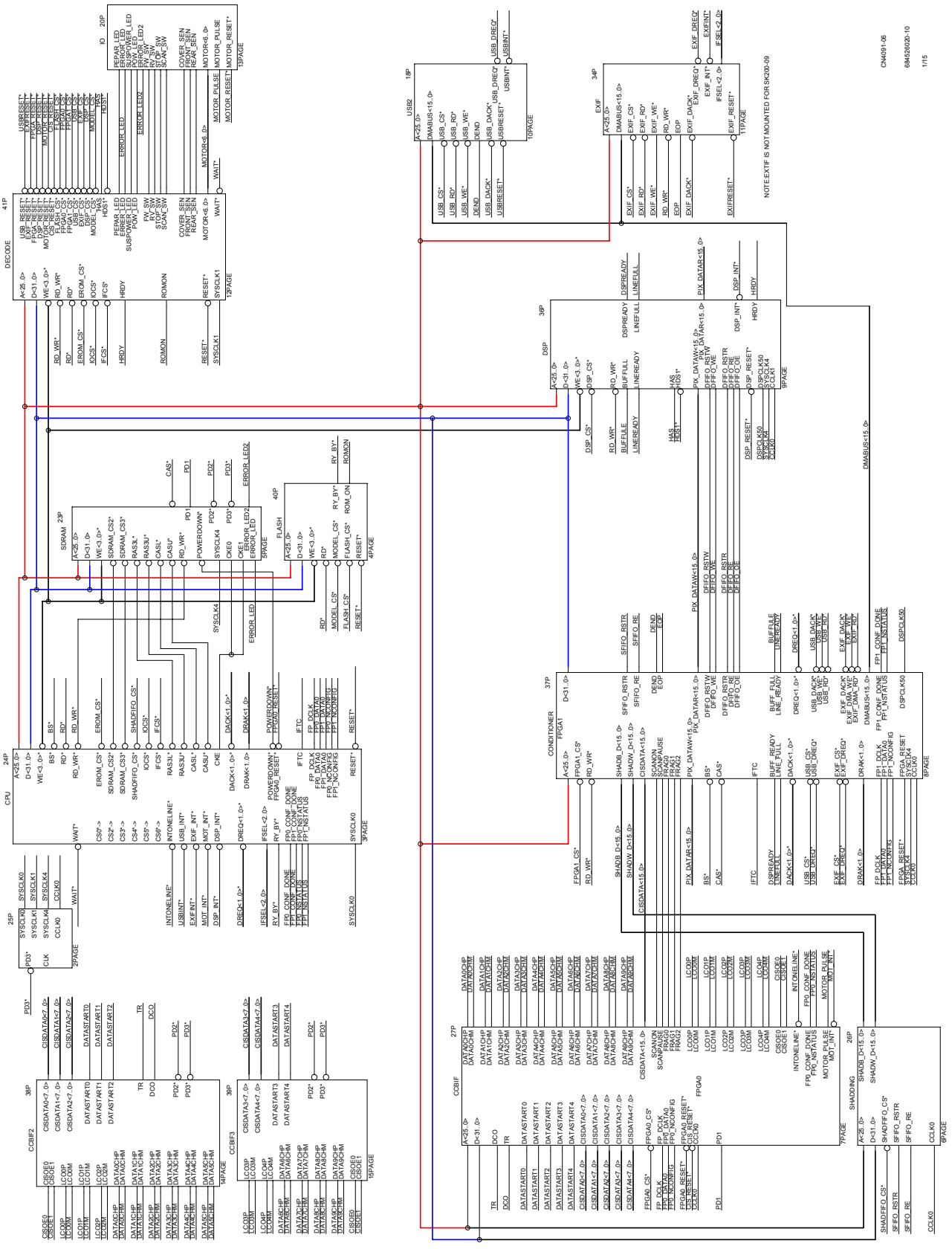
13.1.2 Block Diagram for SK200-09-A



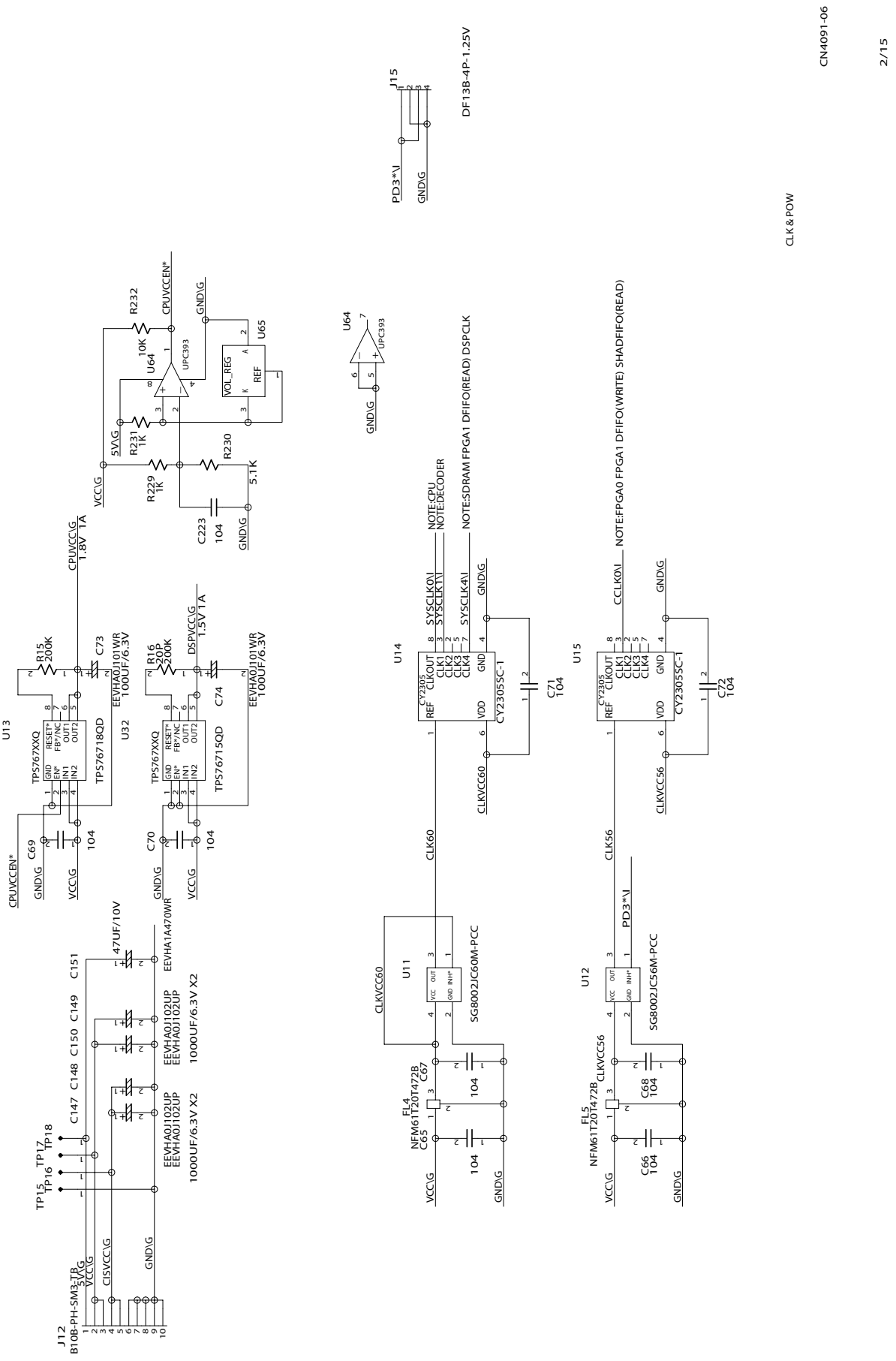
13.2 Circuit Diagrams

13.2.1 Data Controller Board for SK200-09

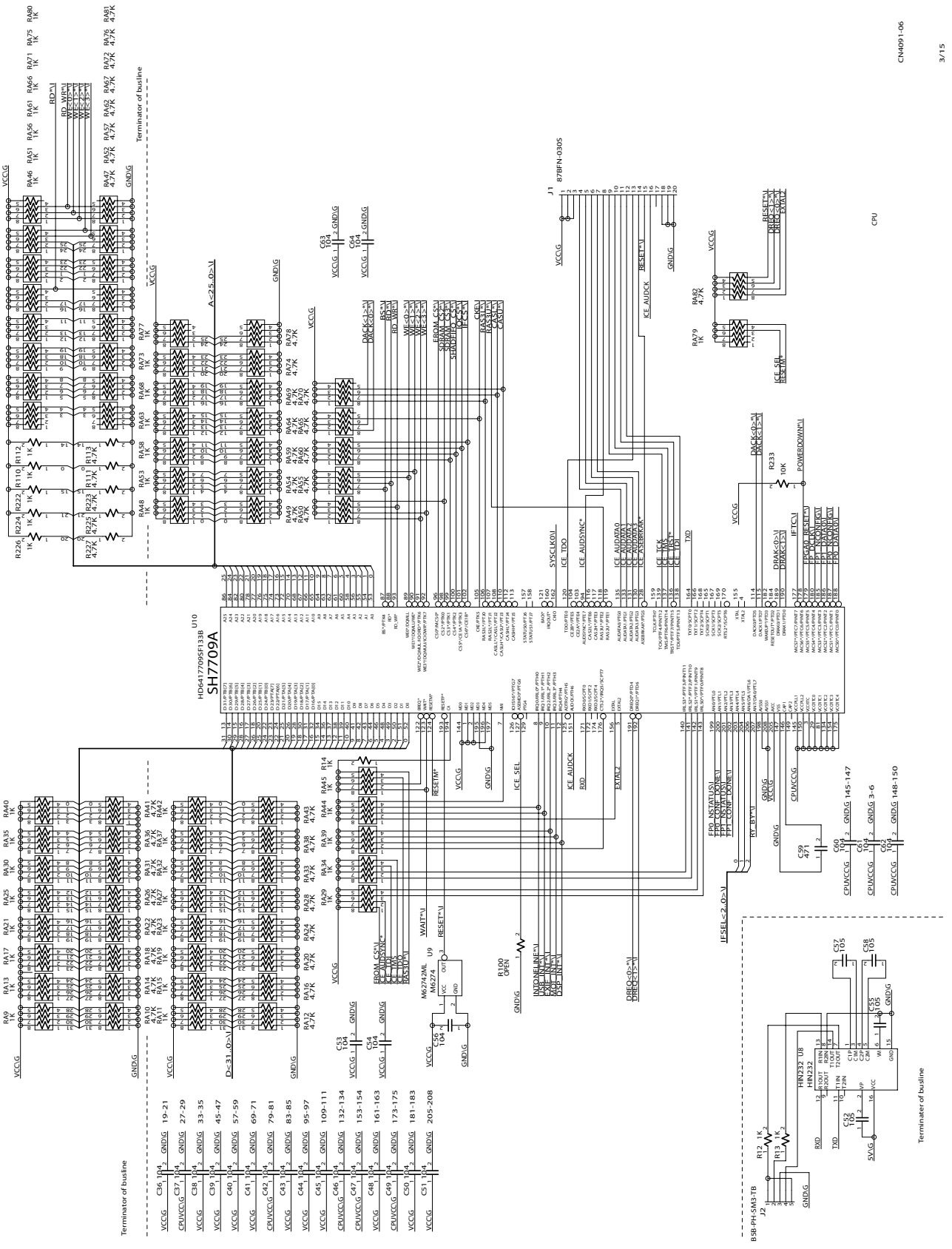
Data Controller Board, CN4091-06 (1/15)



Data Controller Board, CN4091-06 (2/15)



Data Controller Board, CN4091-06 (3/15)


SH7709A
HD6417709SF133B
U10
CN4091-06
3/15
CPU
Terminator of busline
J1 87BFN-0305
B5B-PH-SM3-TB
J2
HIN232
U8
M62742ML
M6274
U9
R100
OPEN
R233
10K
R12 1K
R13 1K
RA1 4.7K
RA2 4.7K
RA3 4.7K
RA4 4.7K
RA5 4.7K
RA6 4.7K
RA7 4.7K
RA8 4.7K
RA9 4.7K
RA10 4.7K
RA11 4.7K
RA12 4.7K
RA13 4.7K
RA14 4.7K
RA15 4.7K
RA16 4.7K
RA17 4.7K
RA18 4.7K
RA19 4.7K
RA20 4.7K
RA21 4.7K
RA22 4.7K
RA23 4.7K
RA24 4.7K
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RA45 4.7K
RA46 1K
RA47 4.7K
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RA49 4.7K
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RA58 1K
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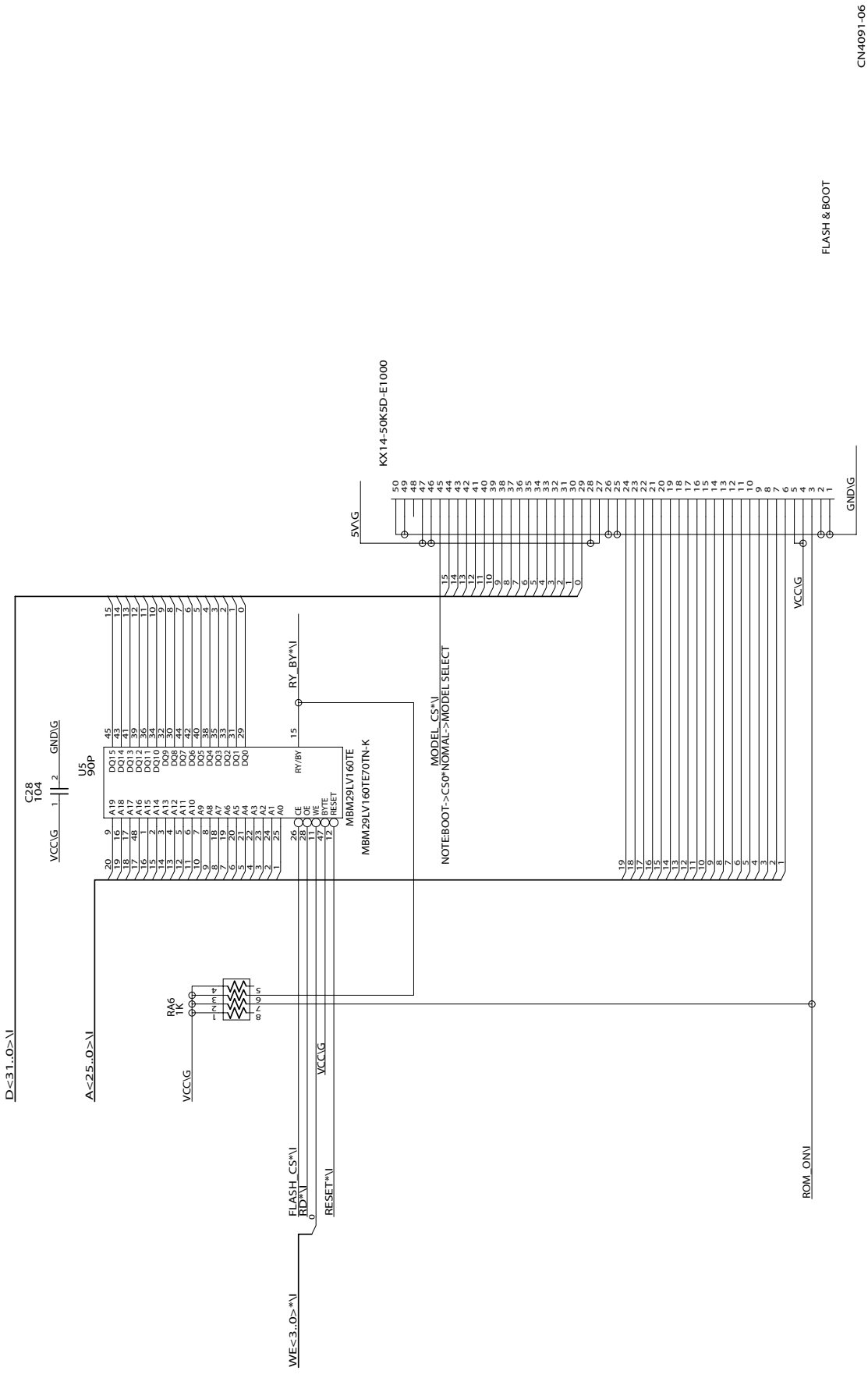
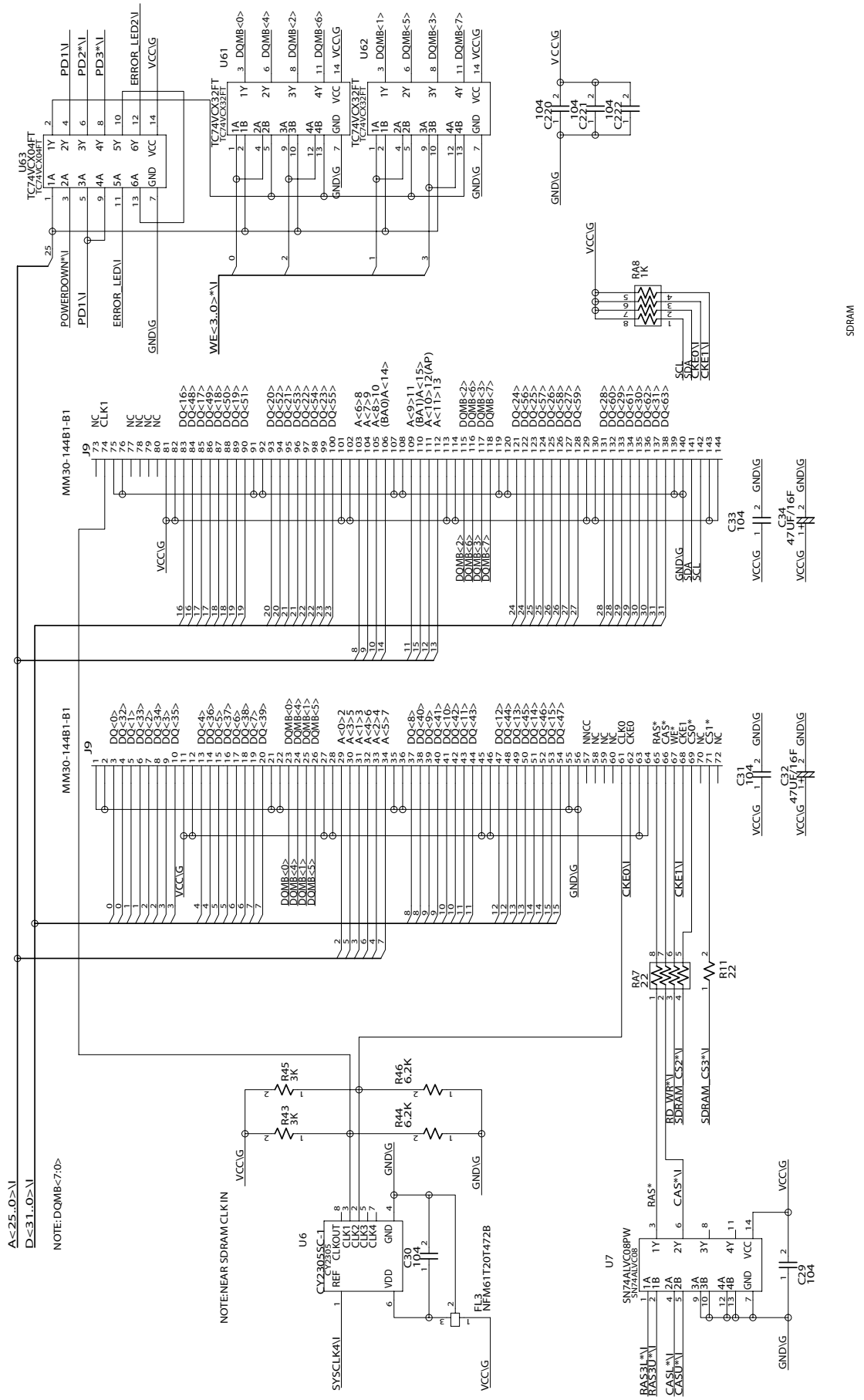
RA63 1K
RA64 4.7K
RA66 1K
RA67 4.7K
RA68 1K
RA69 4.7K
RA71 1K
RA72 4.7K
RA73 1K
RA74 4.7K
RA75 1K
RA76 4.7K
RA77 1K
RA78 4.7K
RA79 1K
RA80 1K
RA81 4.7K
R110 1K
R111 4.7K
R112 1K
R113 4.7K
R222 1K
R223 4.7K
R224 1K
R225 4.7K
R226 1K
R227 4.7K
C53 104
C54 104
C55 104
C56 104
C57 105
C58 105
C59 47
C60 104
C61 104
C62 104
C32 105
C33 104
C34 104
C35 104
C36 104
C37 104
C38 104
C39 104
C40 104
C41 104
C42 104
C43 104
C44 104
C45 104
C46 104
C47 104
C48 104
C49 104
C50 104
C51 104
C64 104
VCCLG
GNDLG
CPUVCCG
5VLG
RESET*\I
WAIT*\I
RD*\I
WR-WR0*\I
WE1-DQM1*\I
WE2-DQM2*\I
WE3-DQM3*\I
BS*\I
CKE\I
RAS*\I
CAS*\I
IFSEL
IFSA0
IFD<15:0>
IFA<25:0>
D<31:0>
A<25:0>
DACK<0>*\I
DACK<1>*\I
DREQ<0>*\I
DREQ<1>*\I
IFSEL<2:0>*\I
FPD_NSTATUS*\I
FPD_CONF_DONE*\I
FPT_NSTATUS*\I
FPT_CONF_DONE*\I
INTONEUNE*\I
INTTWOUNE*\I
NMI*\I
MOD*\I
DSE*\I
BOOT*\I
ICE_AUDCK
ICE_AUDSYNC*
ICE_AUDATA0
ICE_AUDATA1
ICE_AUDATA2
ICE_AUDATA3
ICE_TCK
ICE_TMS*
ICE_TDI*
ICE_TDO
SYSCLK0\I
EXTAL2
POWERDOWN*\I
TXD
RXD
FROM_CS*\I
SRAM_CS*\I
SDRAM_CS*\I
IO_CS*\I
ICE_SEL
RESET*\I
Terminator of busline
D<31:0>*\I
A<25:0>*\I
RD_WR*\I
WE0-WR*\I
WE1-DQM1*\I
WE2-DQM2*\I
WE3-DQM3*\I
FROM_CS*\I
SRAM_CS*\I
SDRAM_CS*\I
IO_CS*\I
CKE\I
RAS*\I
CAS*\I
DACK<0>*\I
DACK<1>*\I
IFSEL
RESET*\I
IFD<15:0>
IFA<25:0>
EXTAL2
FPD_NSTATUS*\I
FPD_CONF_DONE*\I
FPT_NSTATUS*\I
FPT_CONF_DONE*\I
INTONEUNE*\I
INTTWOUNE*\I
NMI*\I
MOD*\I
DSE*\I
BOOT*\I
ICE_AUDCK
ICE_AUDSYNC*
ICE_AUDATA0
ICE_AUDATA1
ICE_AUDATA2
ICE_AUDATA3
ICE_TCK
ICE_TMS*
ICE_TDI*
ICE_TDO
SYSCLK0\I
EXTAL2
POWERDOWN*\I
TXD
RXD
IFSEL<2:0>*\I
DREQ<0>*\I
DREQ<1>*\I
RESET*\I
WAIT*\I
IFSEL
IFSA0
IFD<15:0>
IFA<25:0>
DACK<0>*\I
DACK<1>*\I
CPUVCCG
GNDLG
VCCLG
5VLG
RY_BY*\I

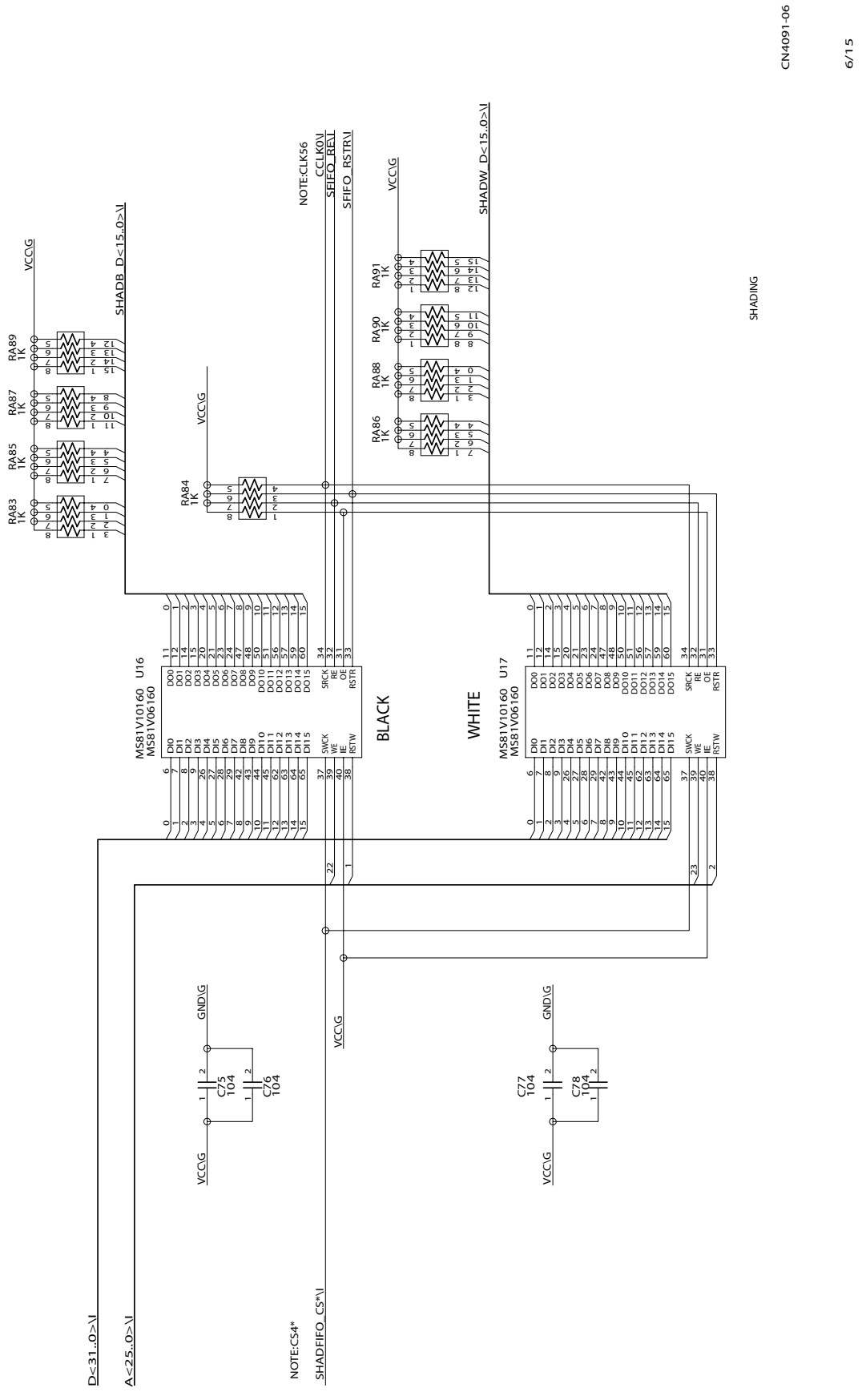
Data Controller Board, CN4091-06 (4/15)



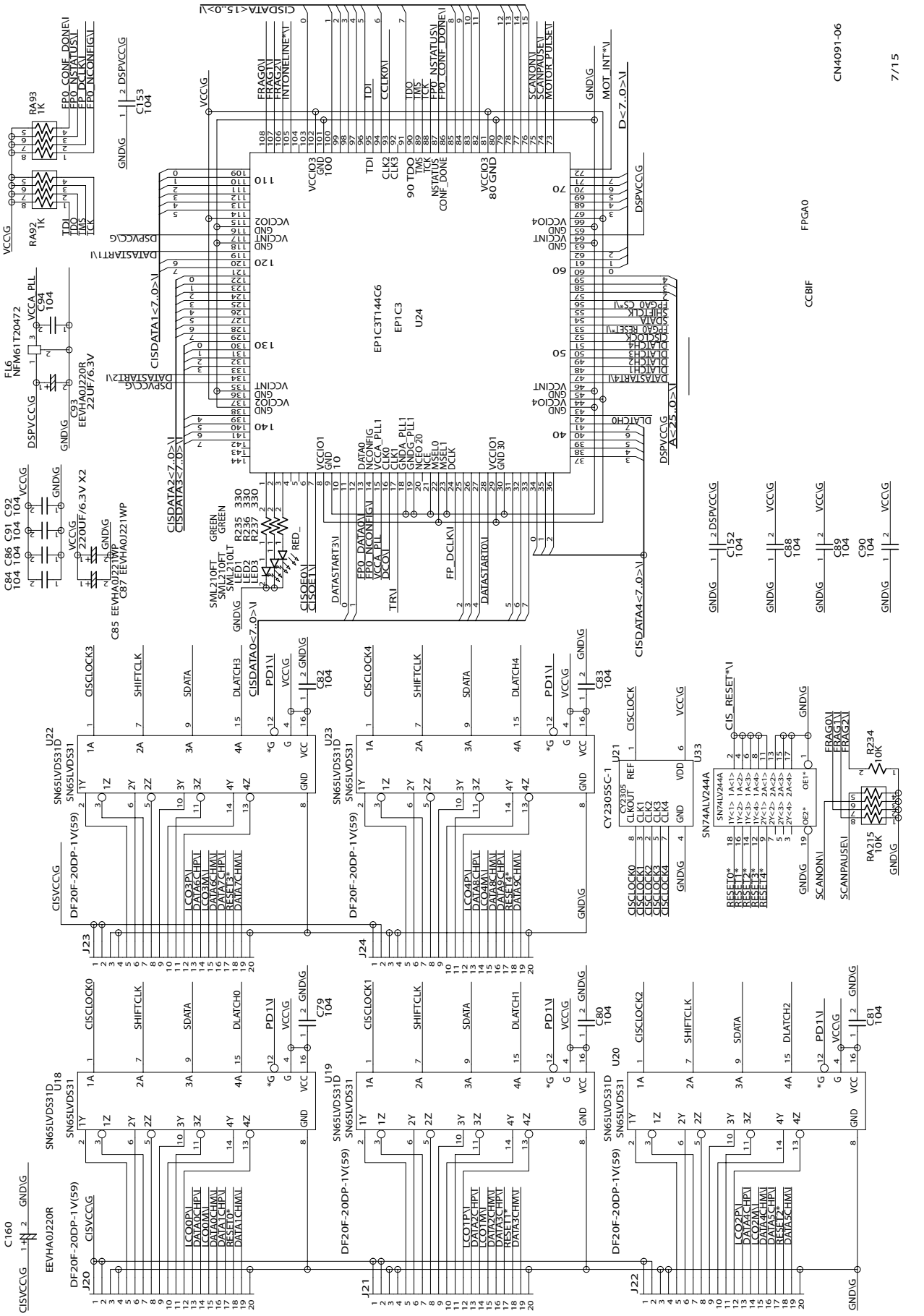
Data Controller Board, CN4091-06 (5/15)



Data Controller Board, CN4091-06 (6/15)

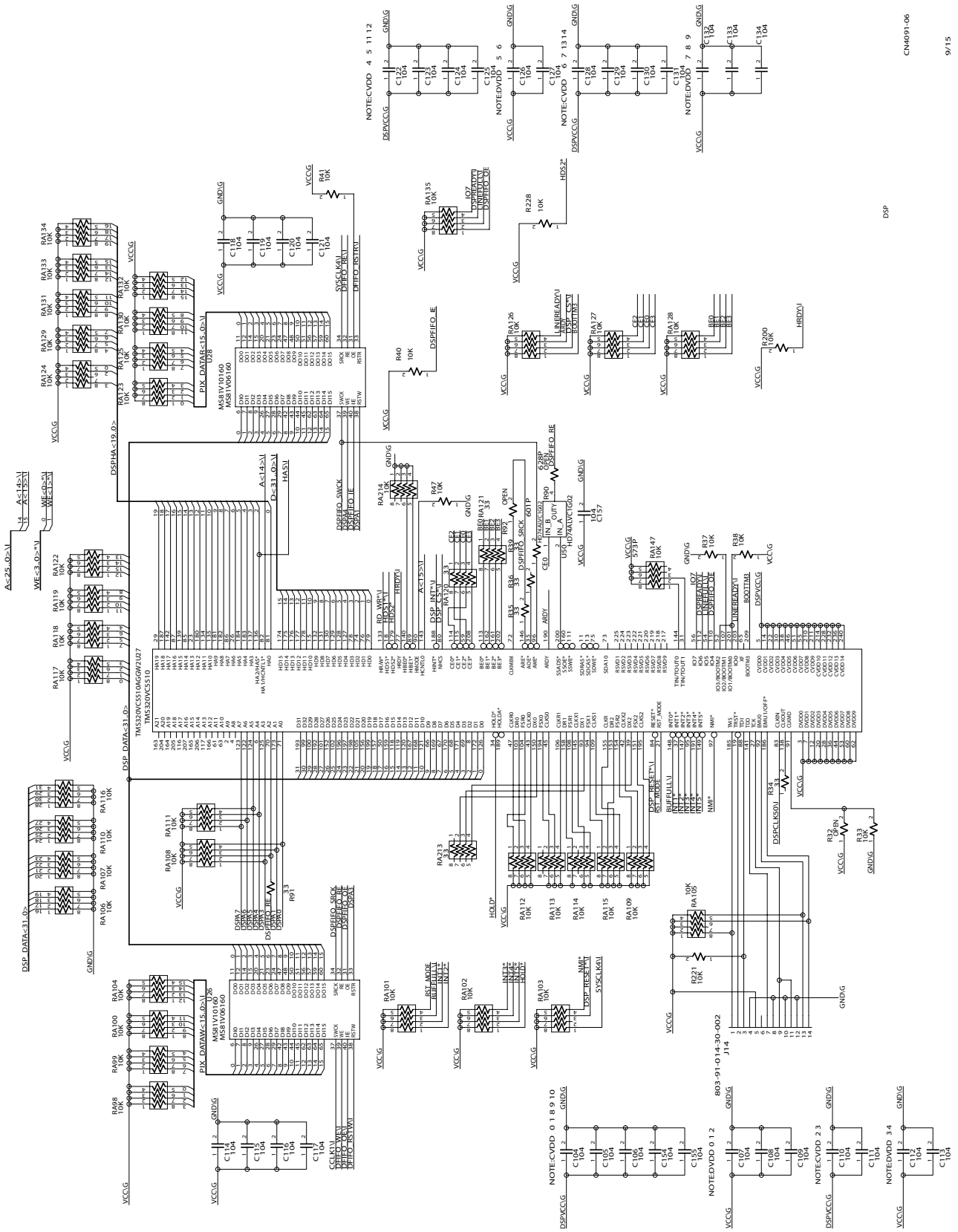


Data Controller Board, CN4091-06 (7/15)

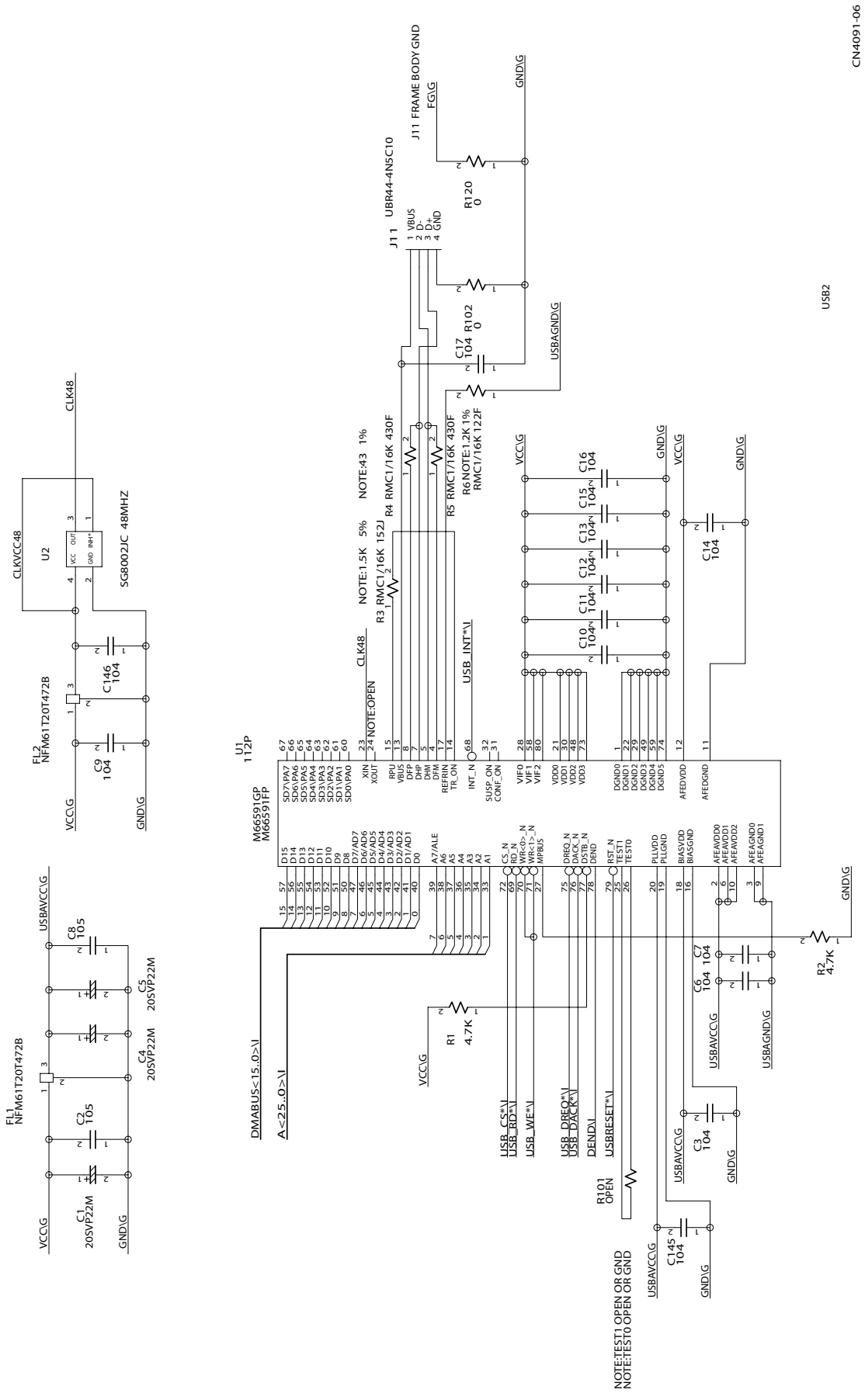


Data Controller Board, CN4091-06 (8/15)

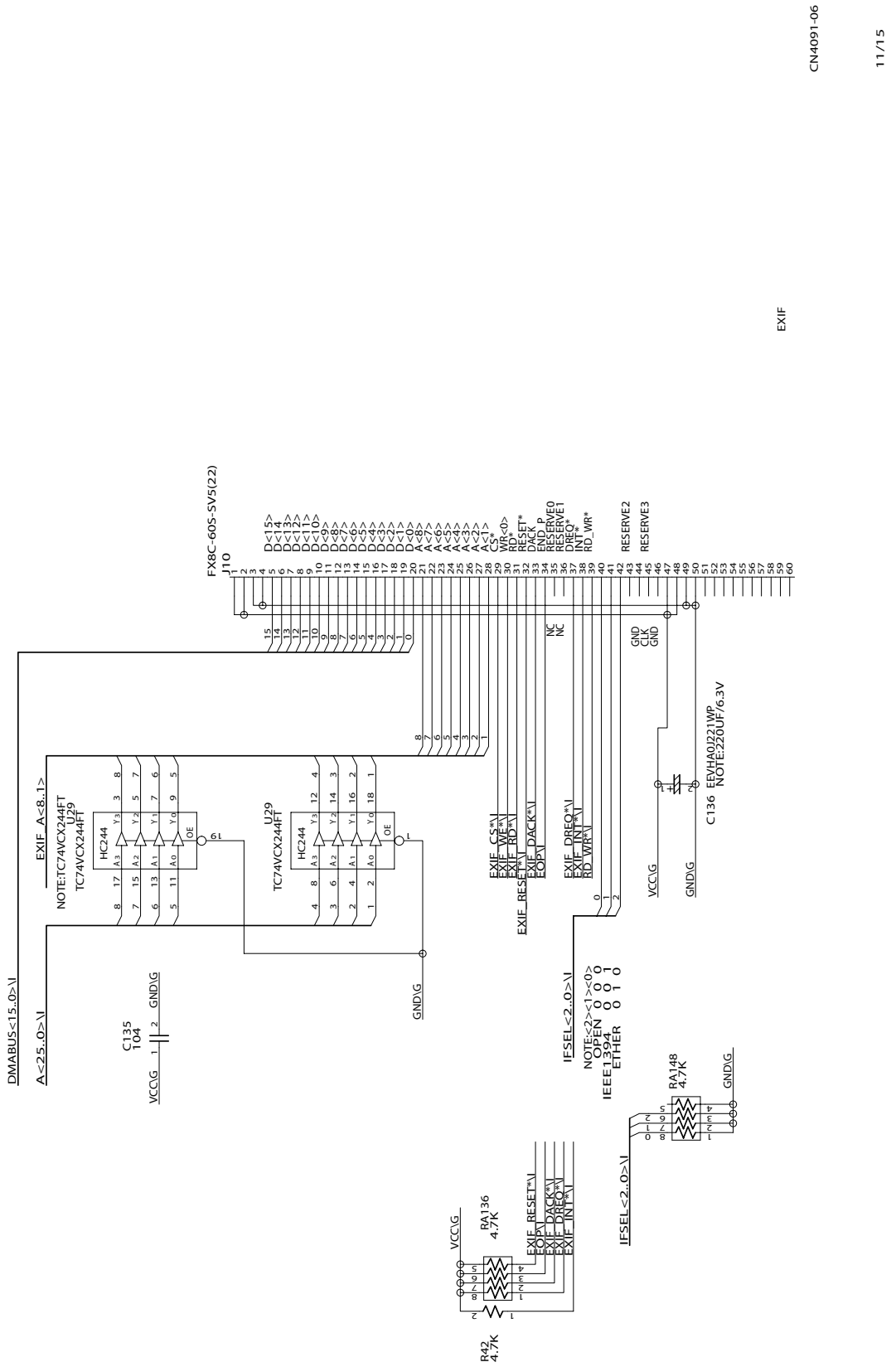
Data Controller Board, CN4091-06 (9/15)



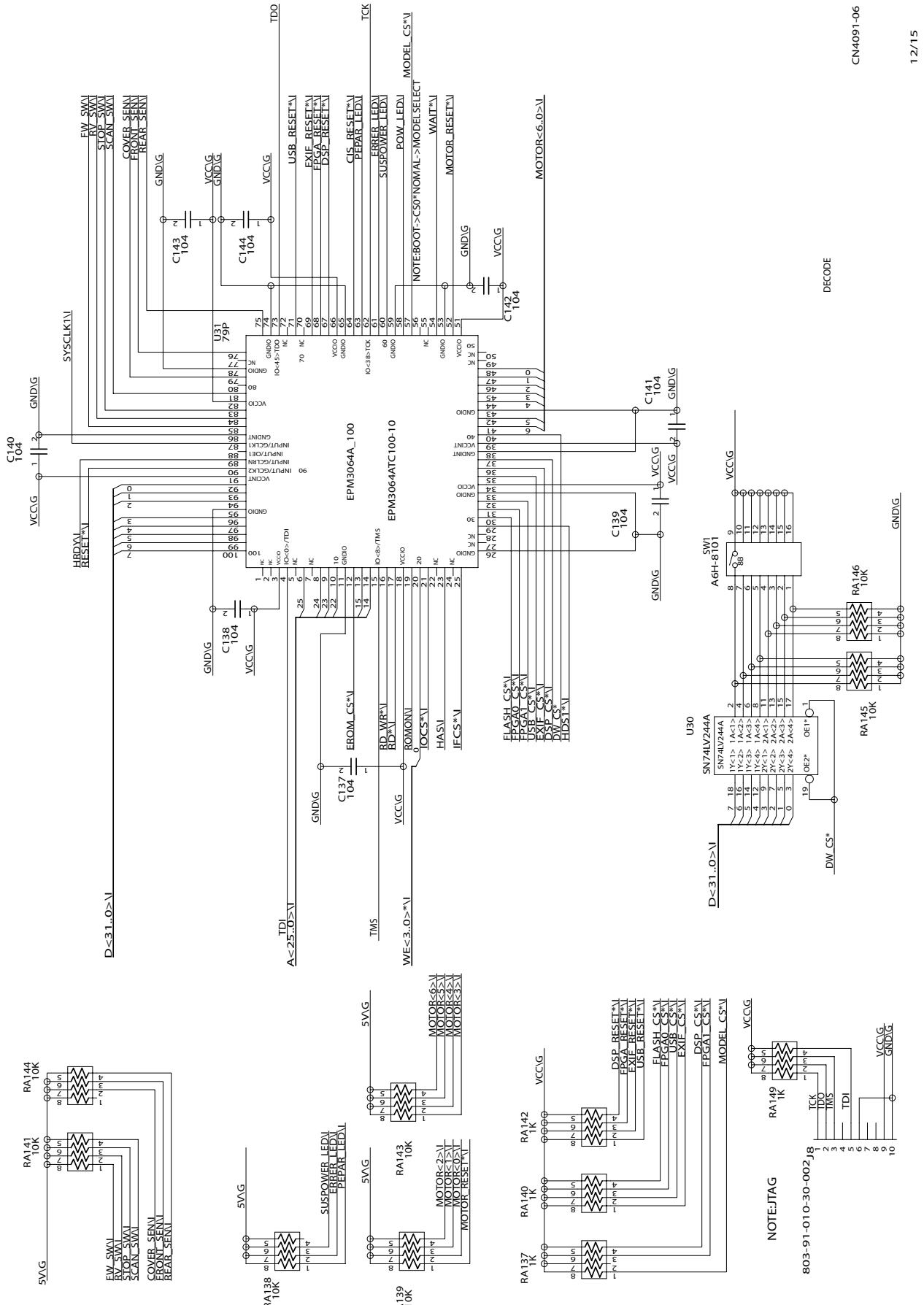
Data Controller Board, CN4091-06 (10/15)



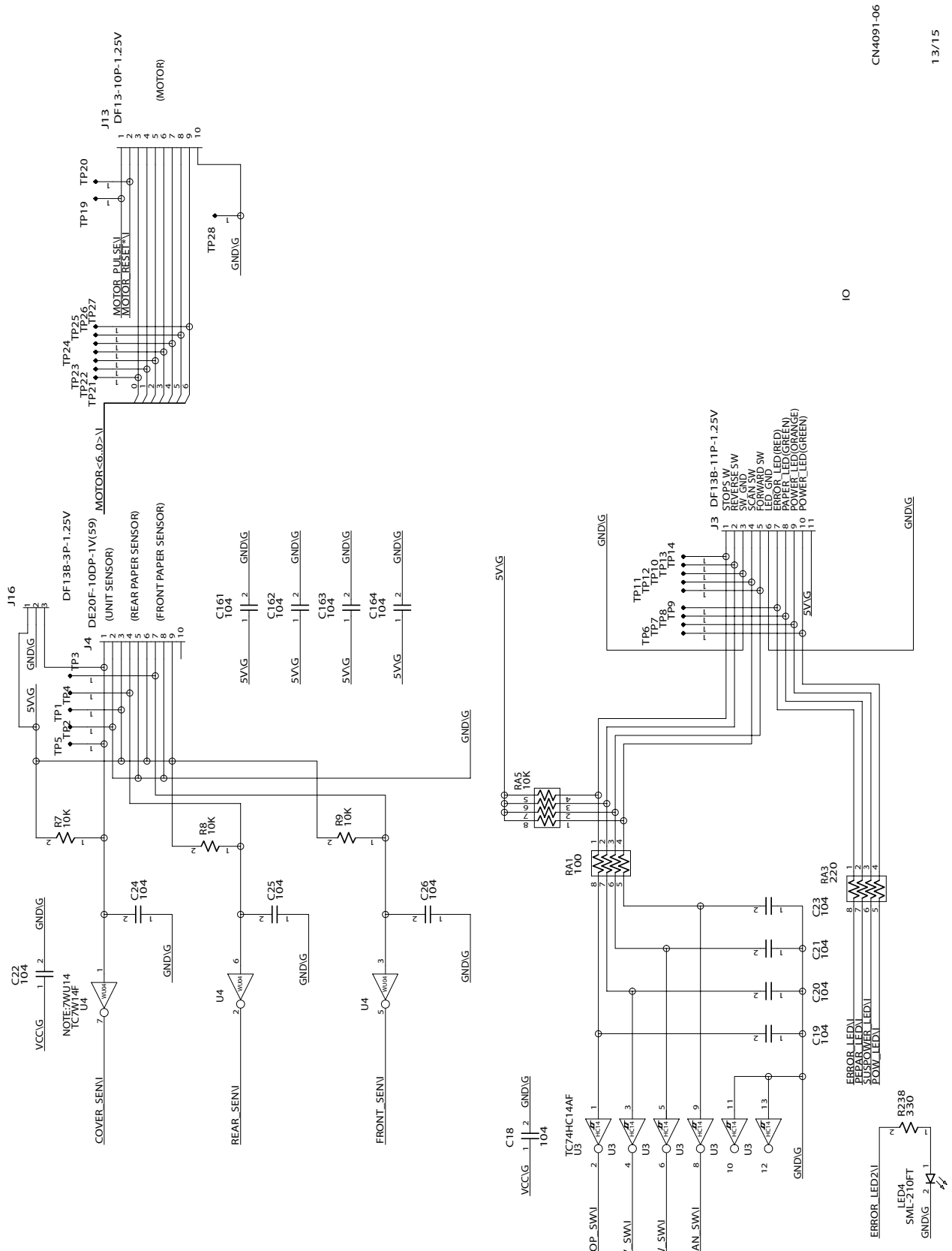
Data Controller Board, CN4091-06 (11/15)



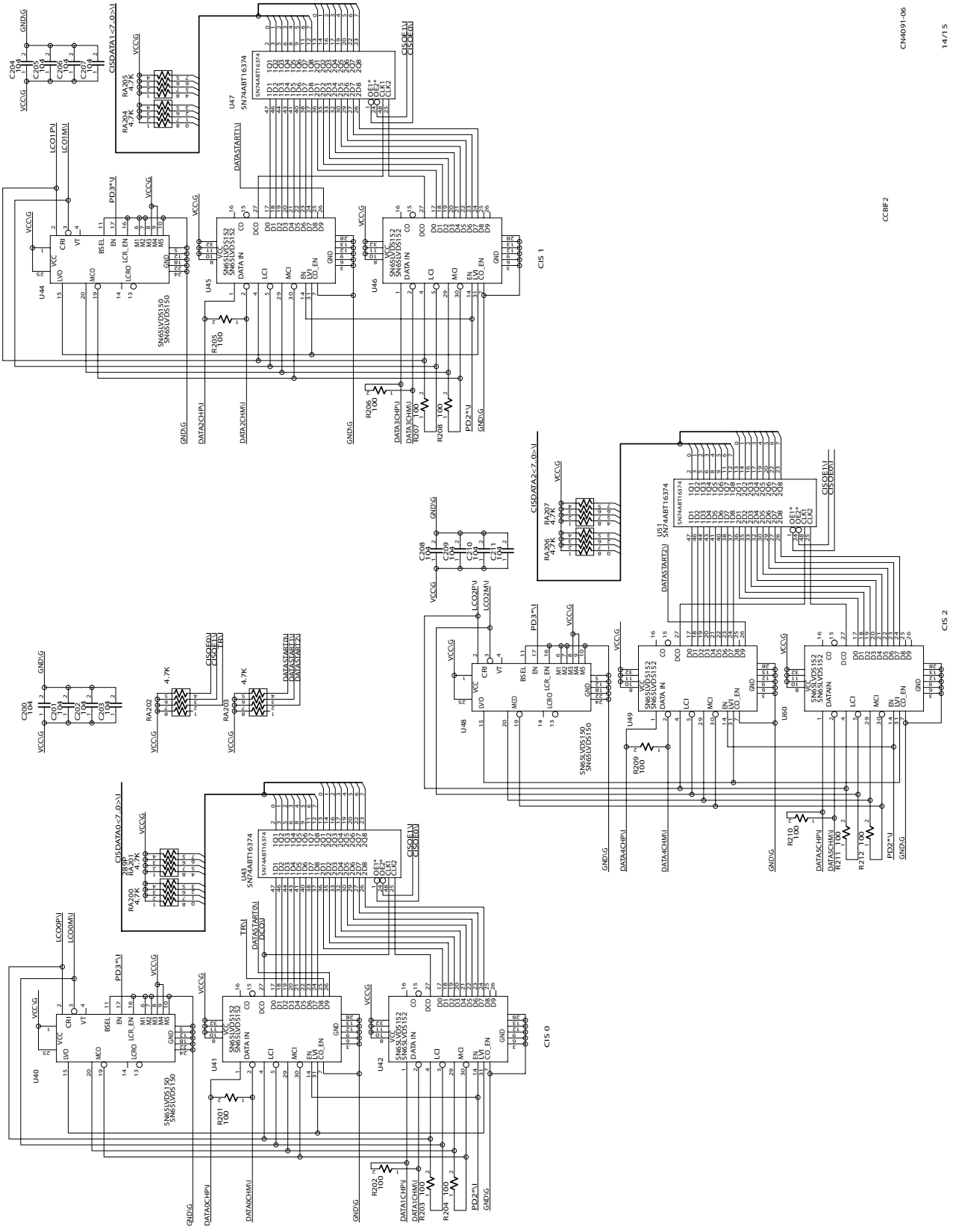
Data Controller Board, CN4091-06 (12/15)



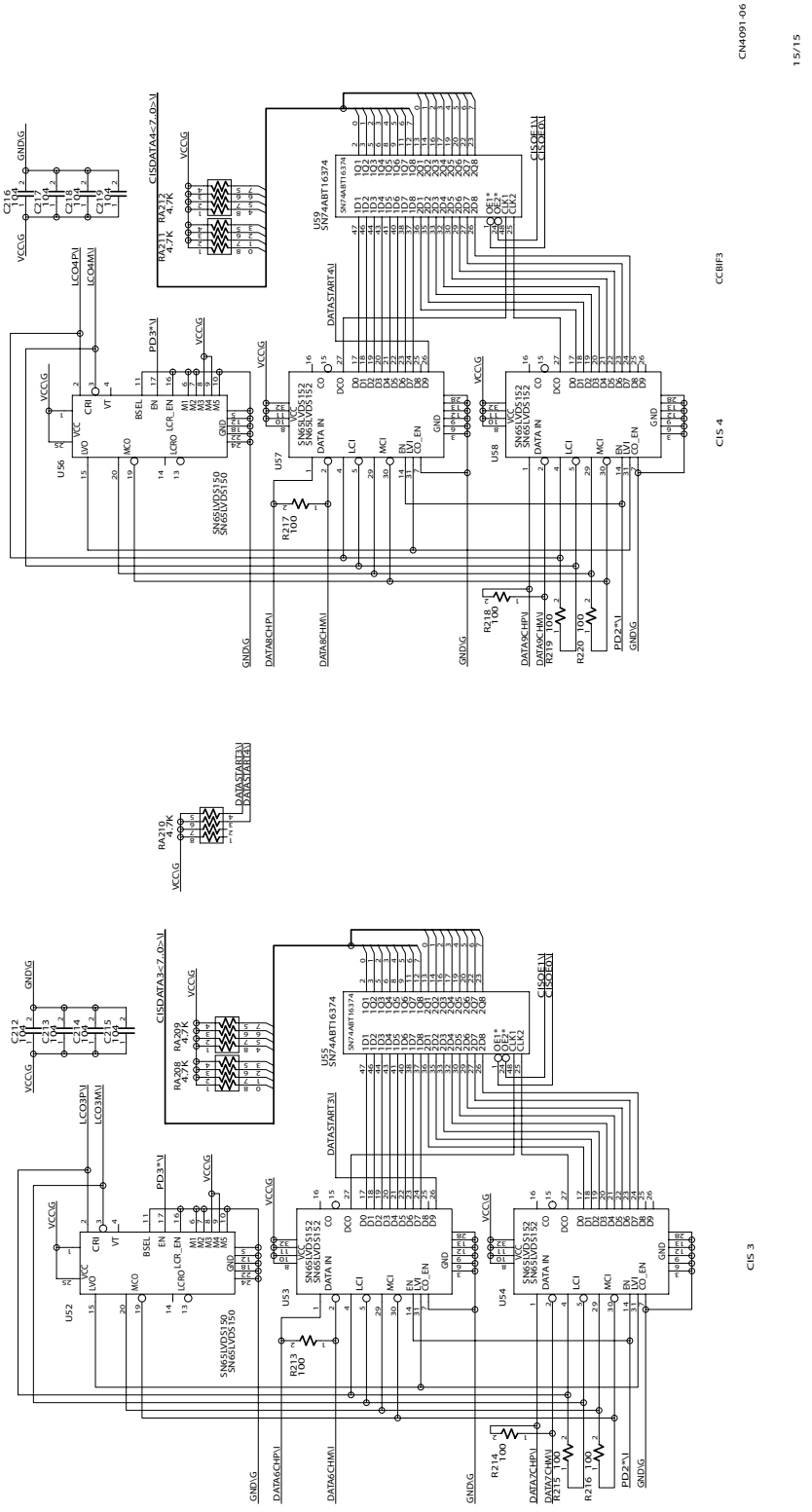
Data Controller Board, CN4091-06 (13/15)



Data Controller Board, CN4091-06 (14/15)

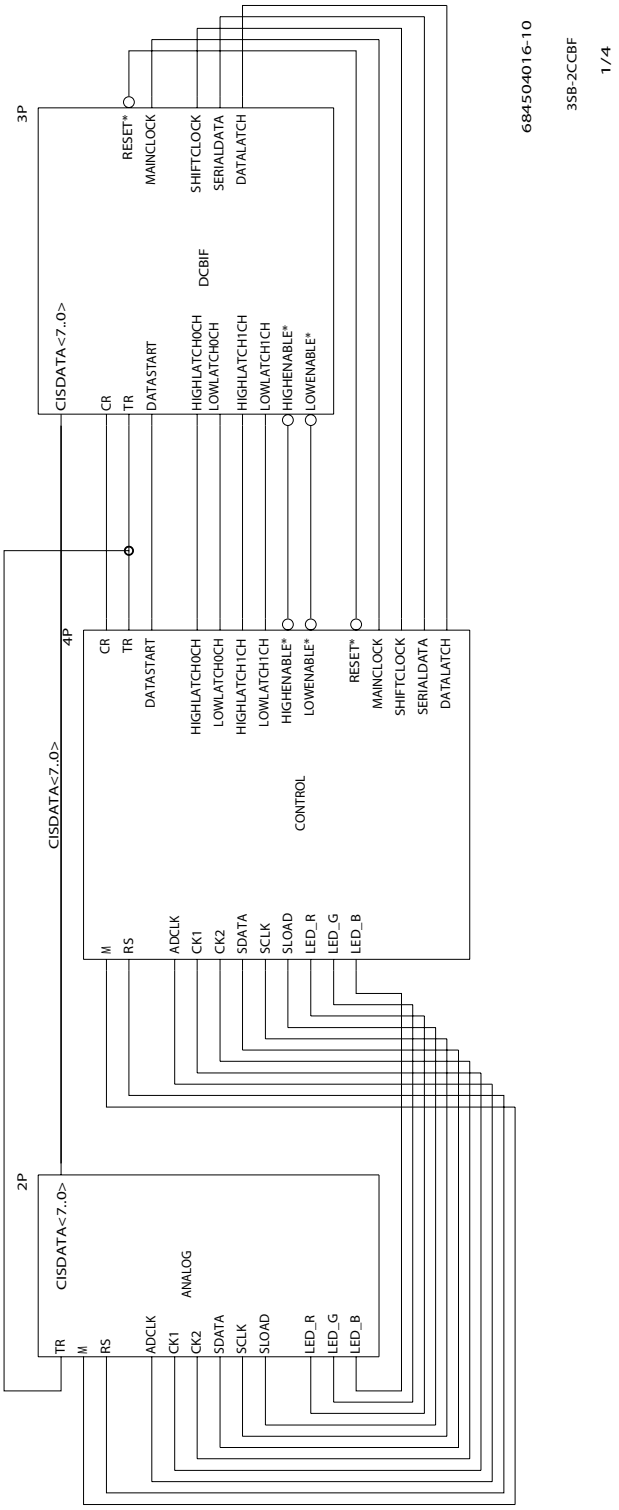


Data Controller Board, CN4091-06 (15/15)

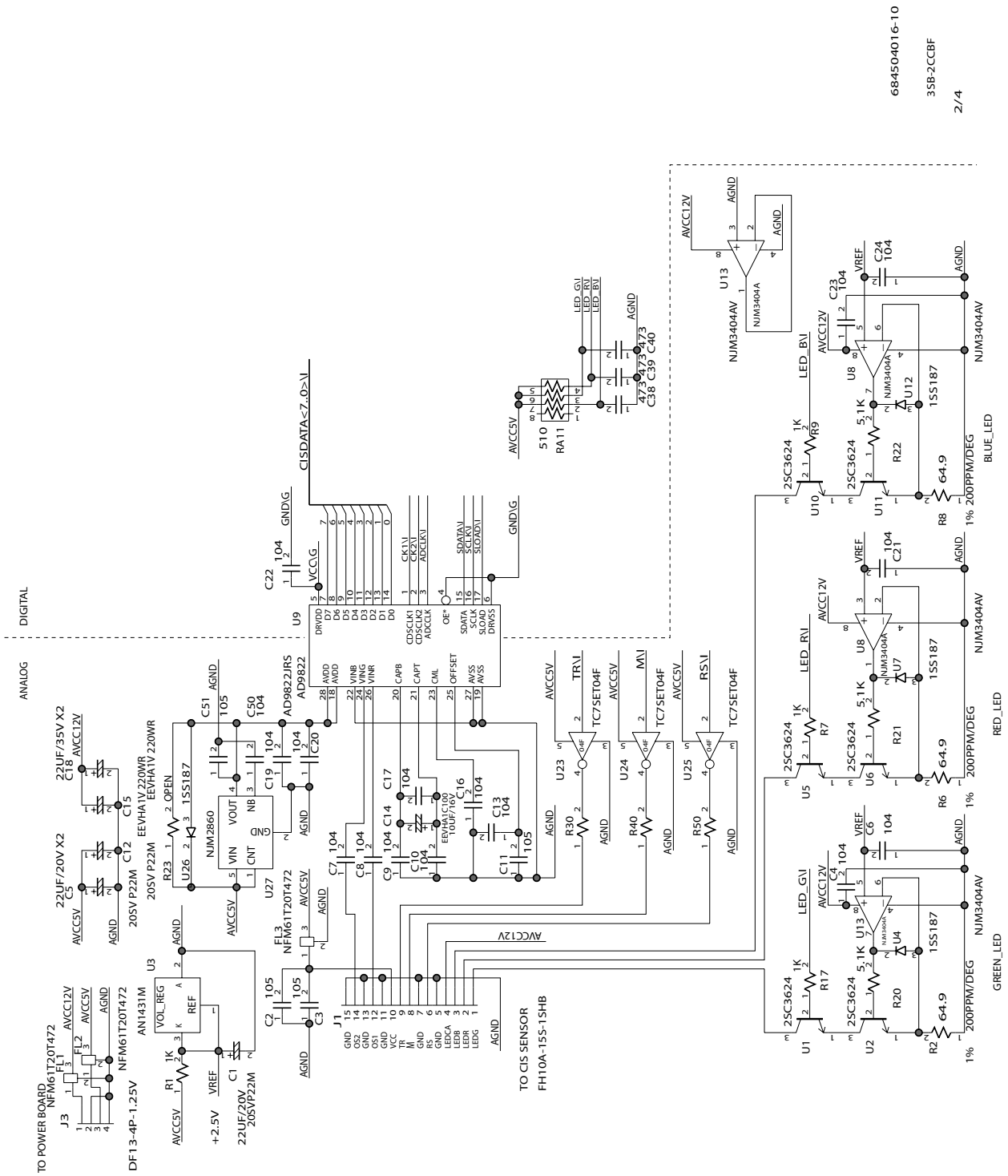


13.2.2 CIS Controller Board for SK200-09

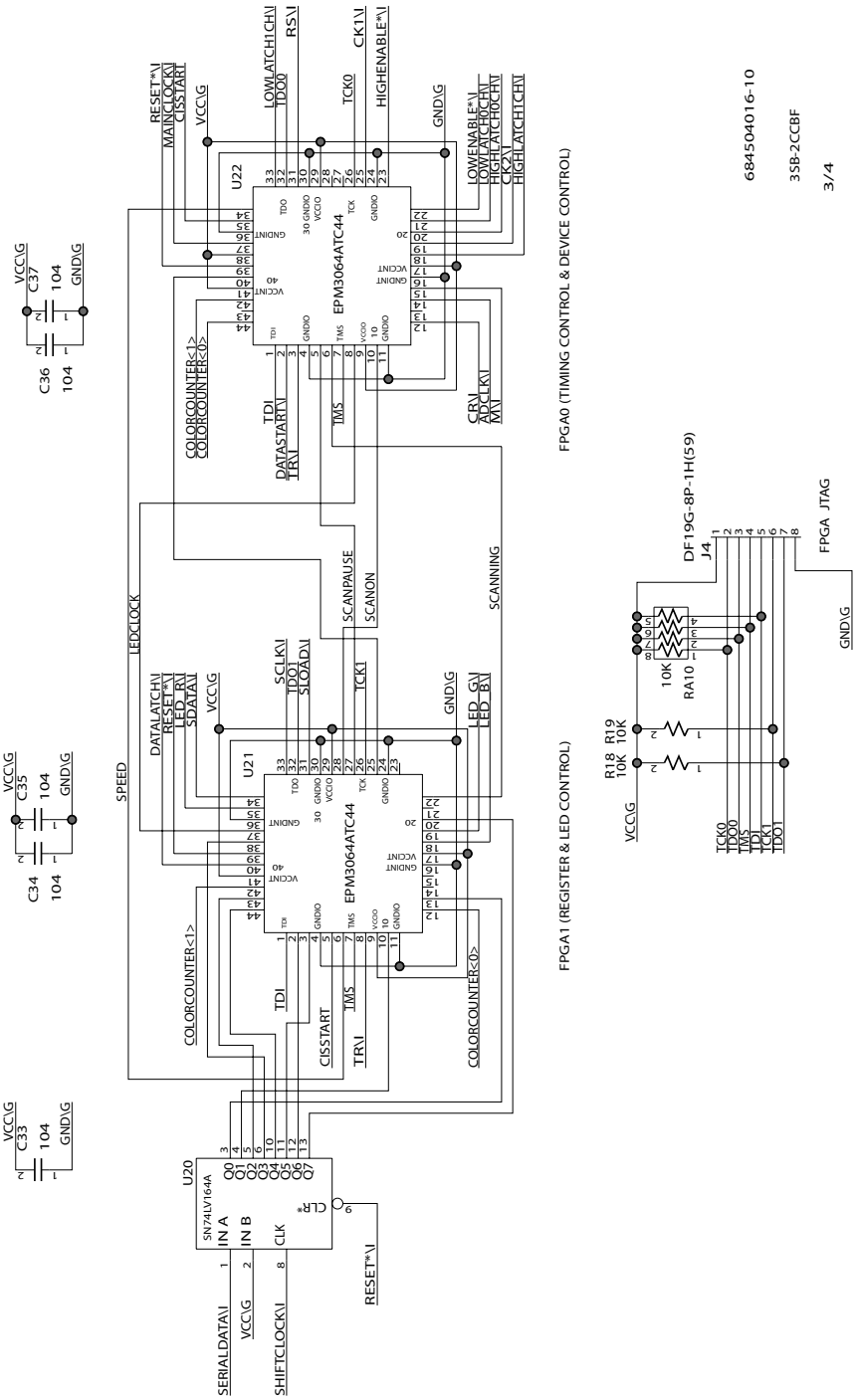
CIS Controller Board, CN4091-08 (1/4)



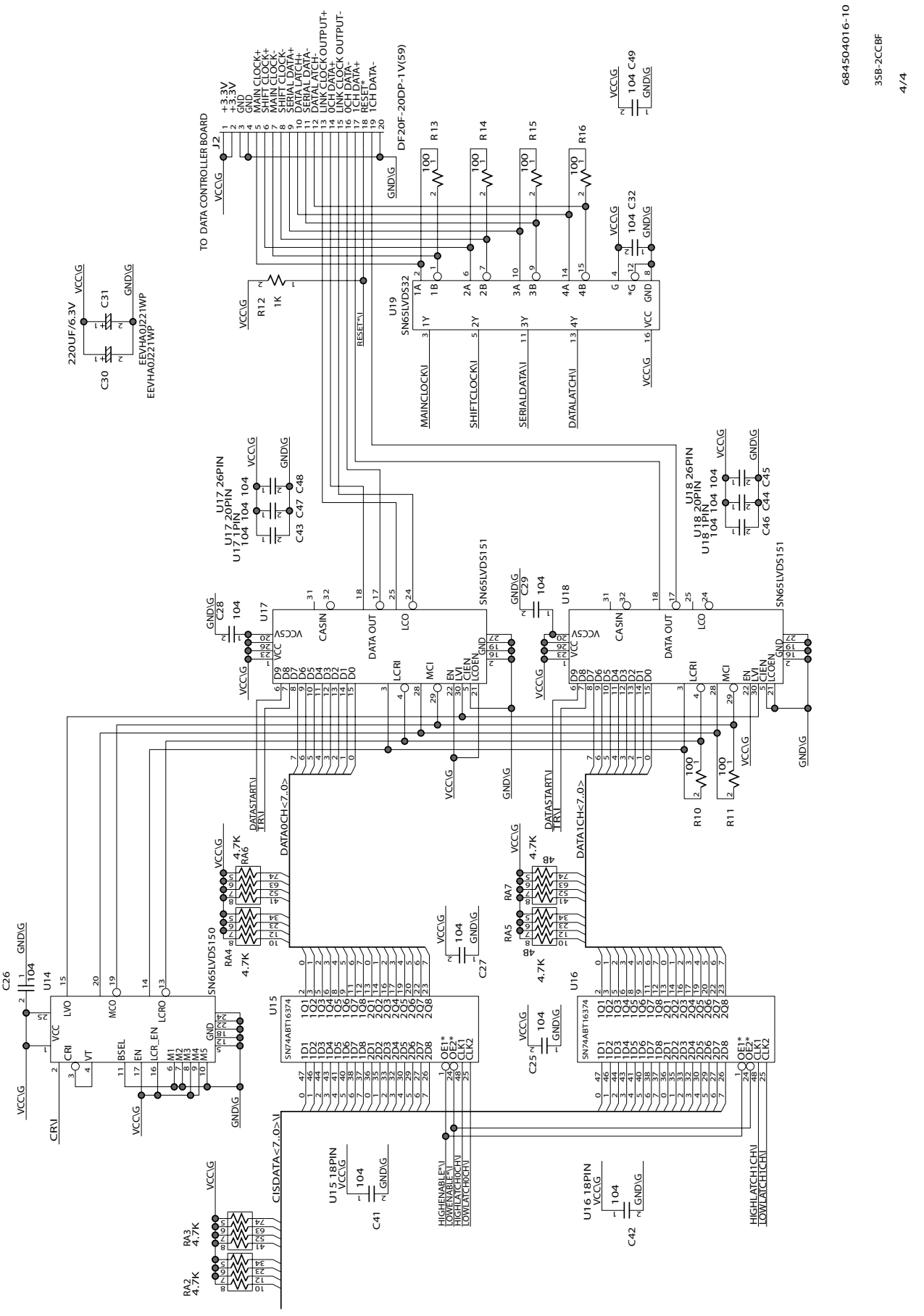
CIS Controller Board, CN4091-08 (2/4)



CIS Controller Board, CN4091-08 (3/4)

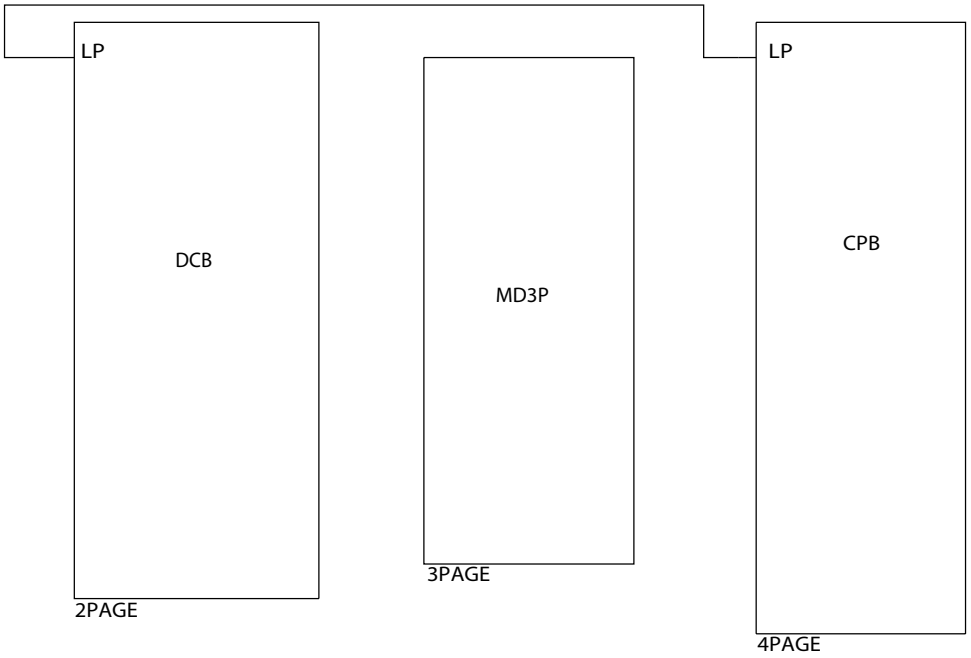


CIS Controller Board, CN4091-08 (4/4)



13.2.3 Power Board for SK200-09

Power Board, CN4091-07 (1/4)



3SB_2POWERH

684504118-10

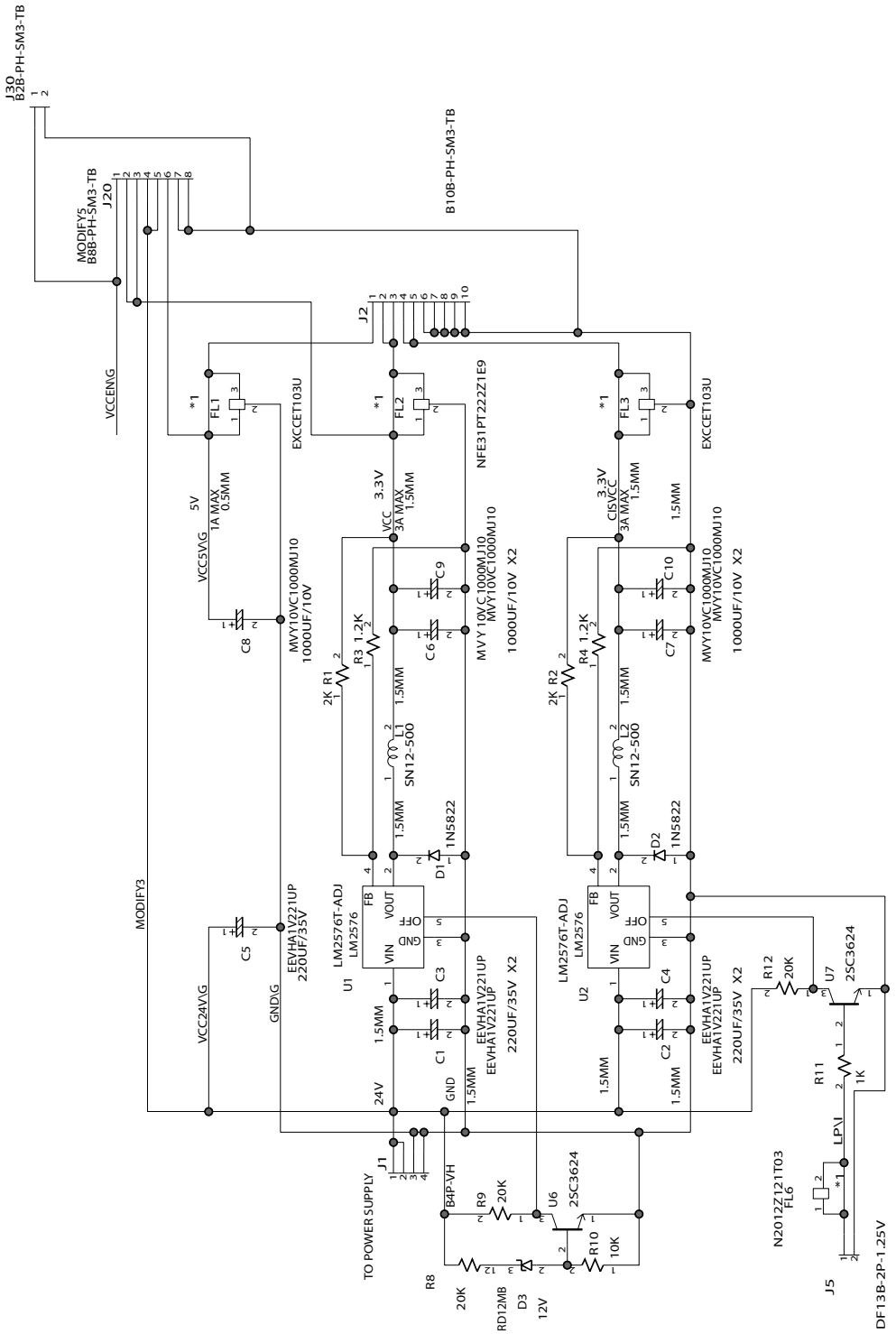
1/4

Power Board, CN4091-07 (2/4)

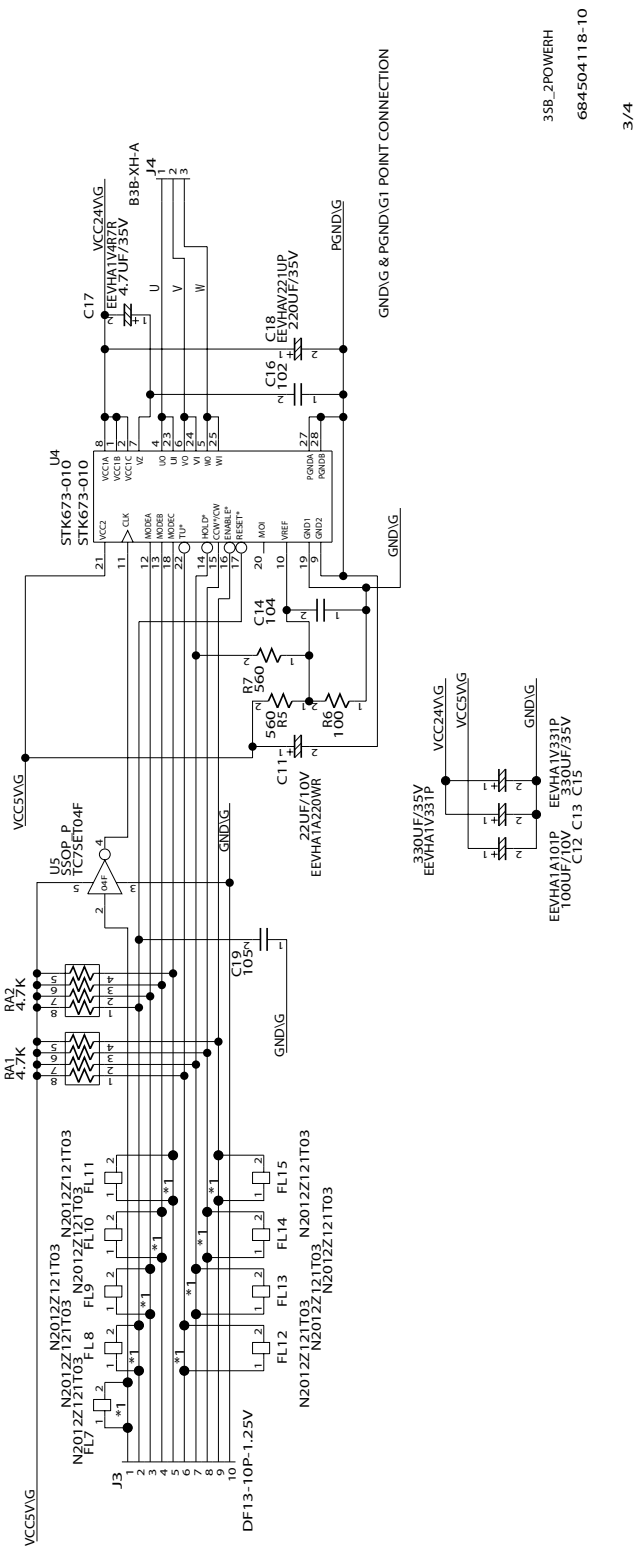
3SB_2POWERH

68450411 8-10

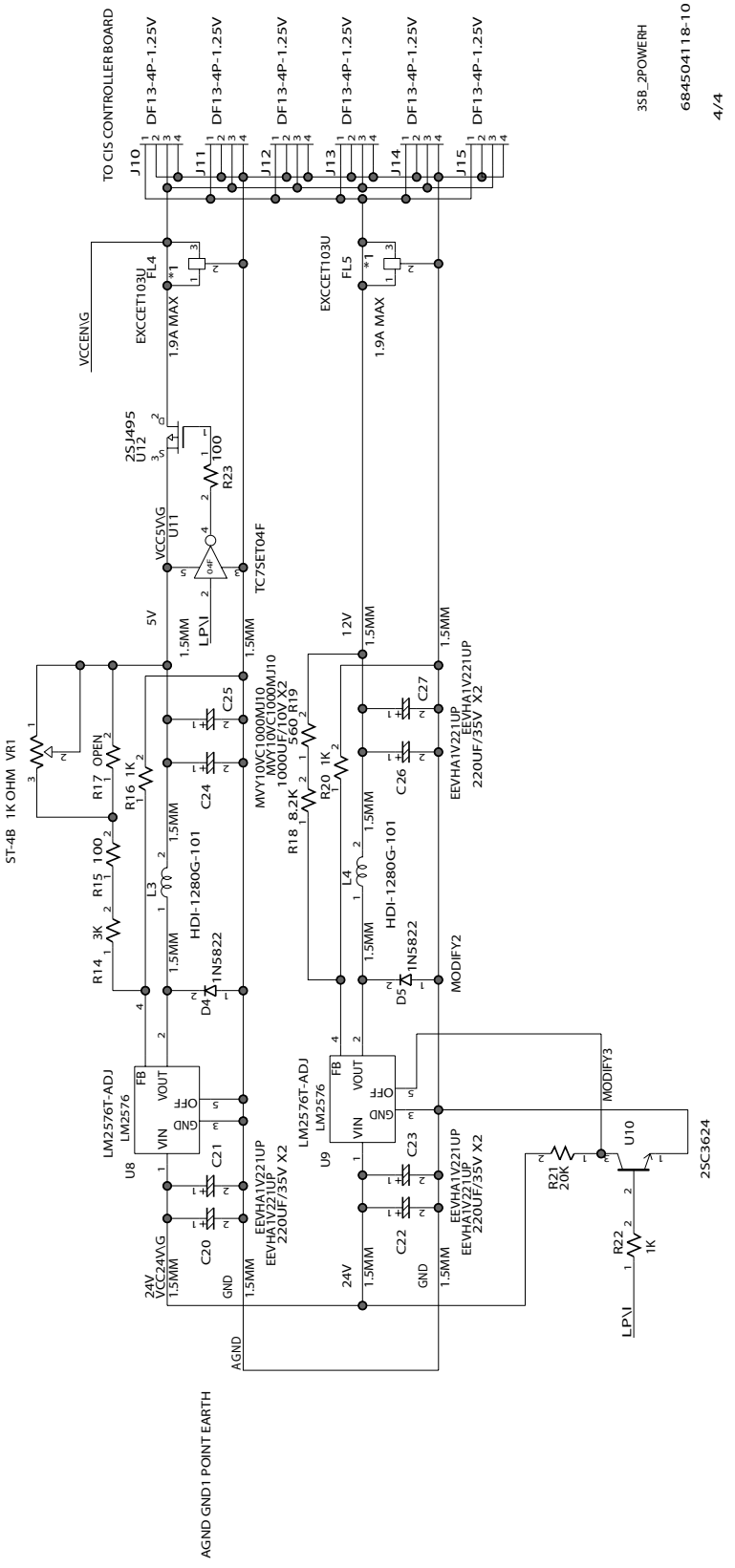
2/4



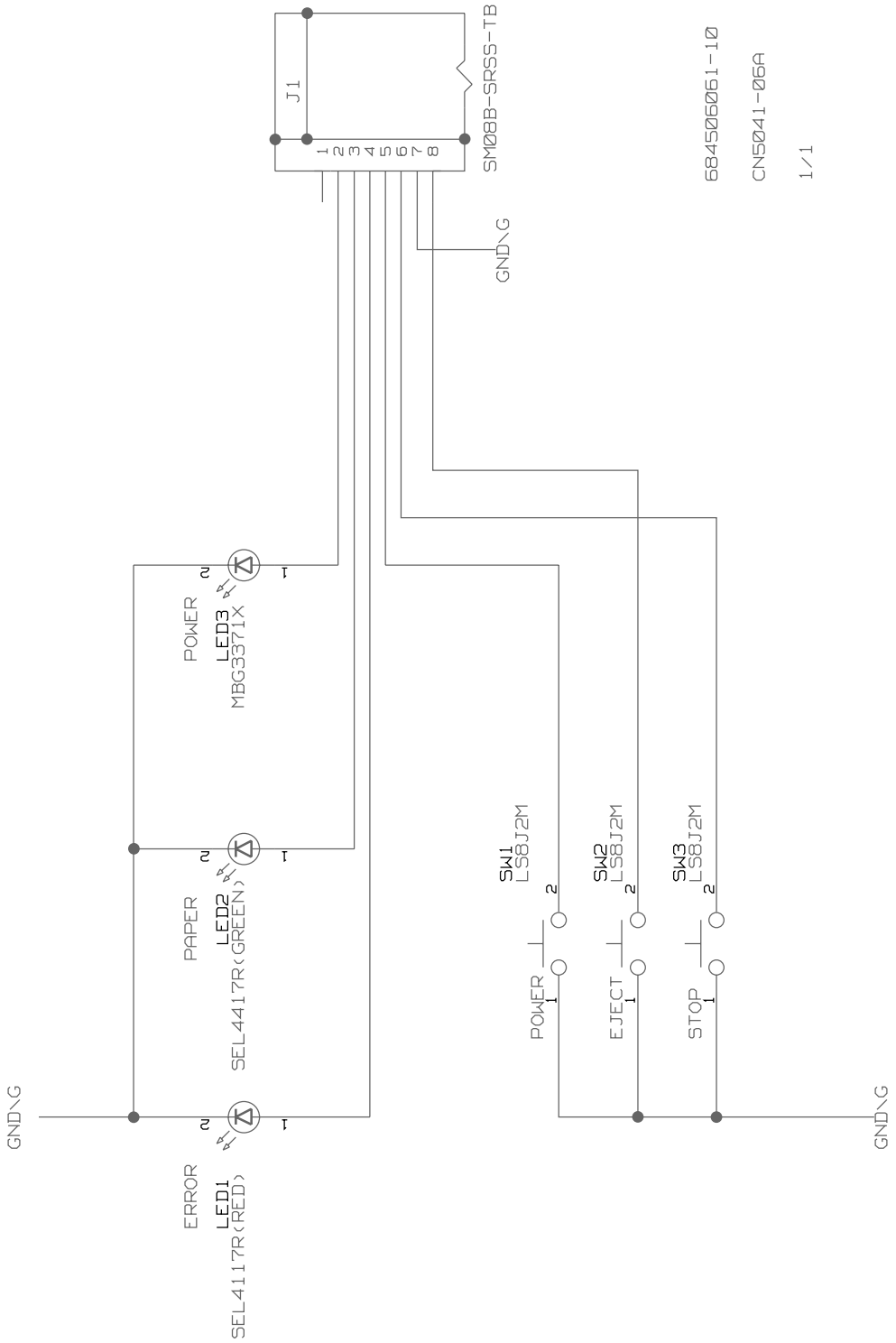
Power Board, CN4091-07 (3/4)



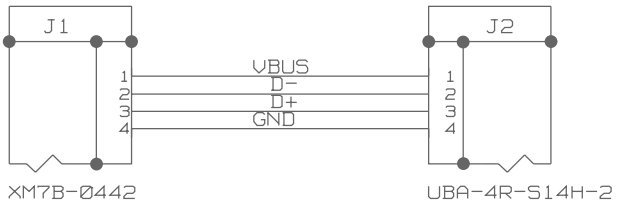
Power Board, CN4091-07 (4/4)



13.2.4 Control Panel Board, CN5041-06A



13.2.5 USB Relay Board, CN5041-07



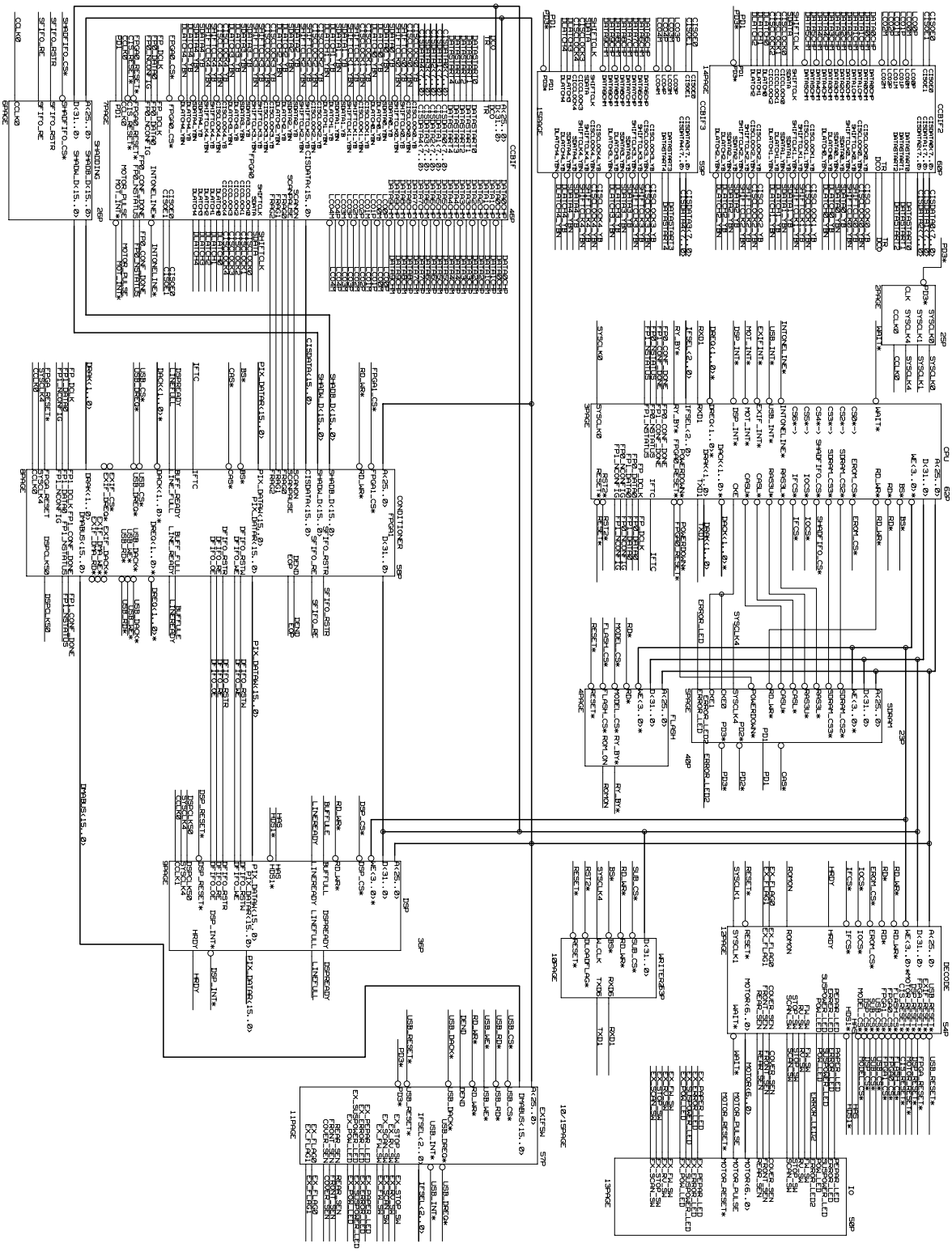
USB 684506070-10
USB_RLY

CN5041-07

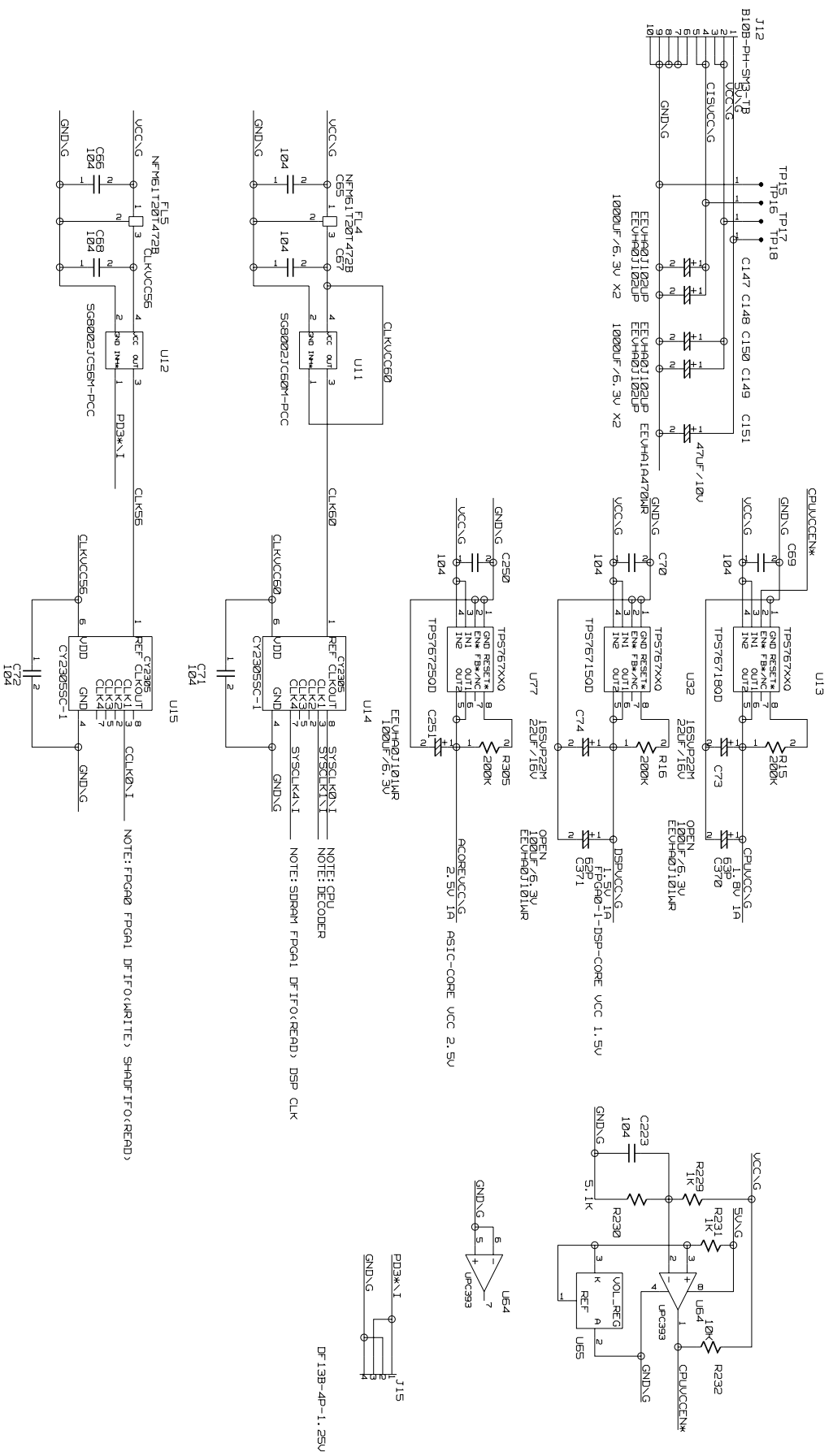
1/1

13.2.6 Data Controller Board for SK200-09-A

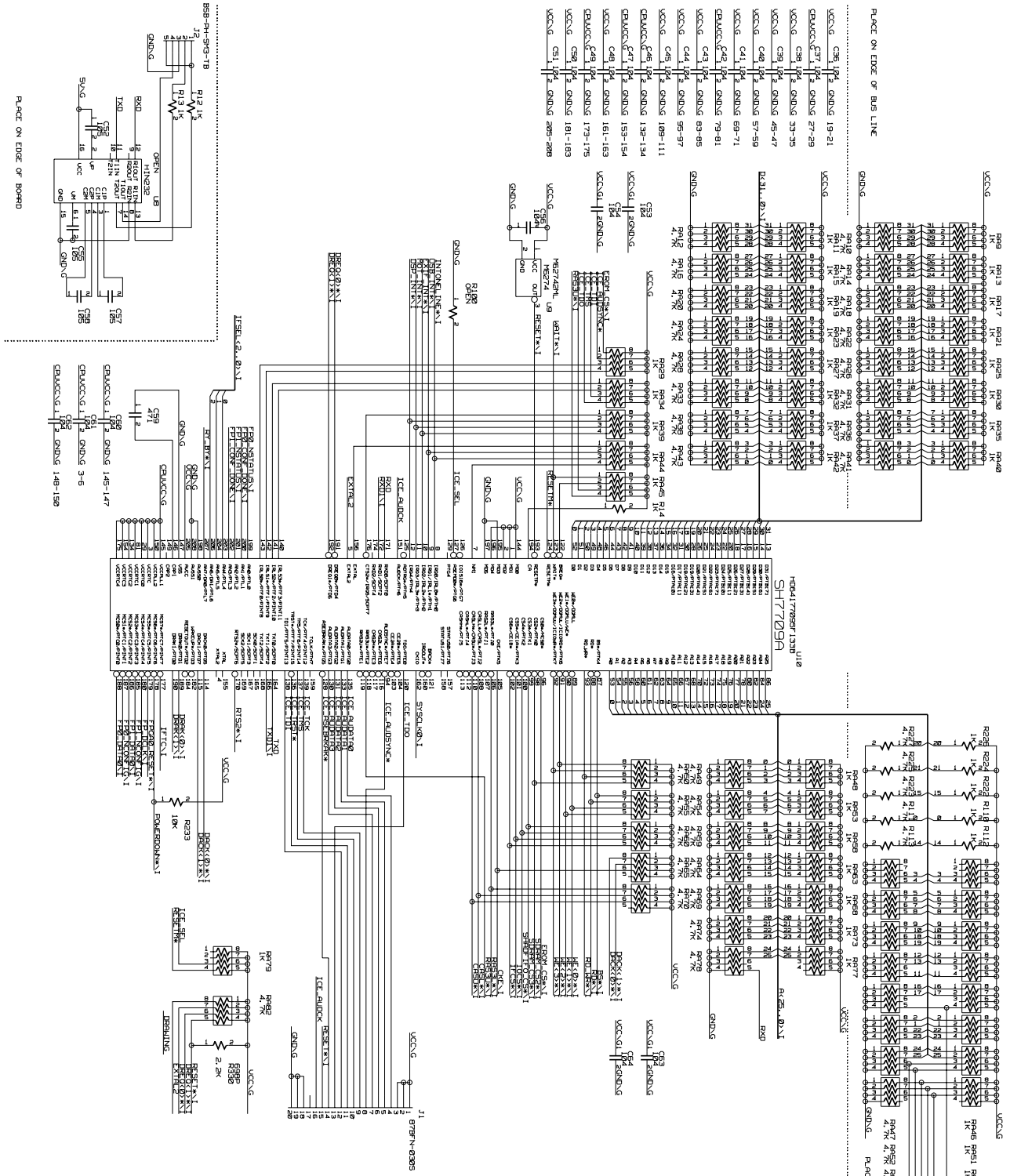
Data Controller Board, CN4091-16A (1/16)



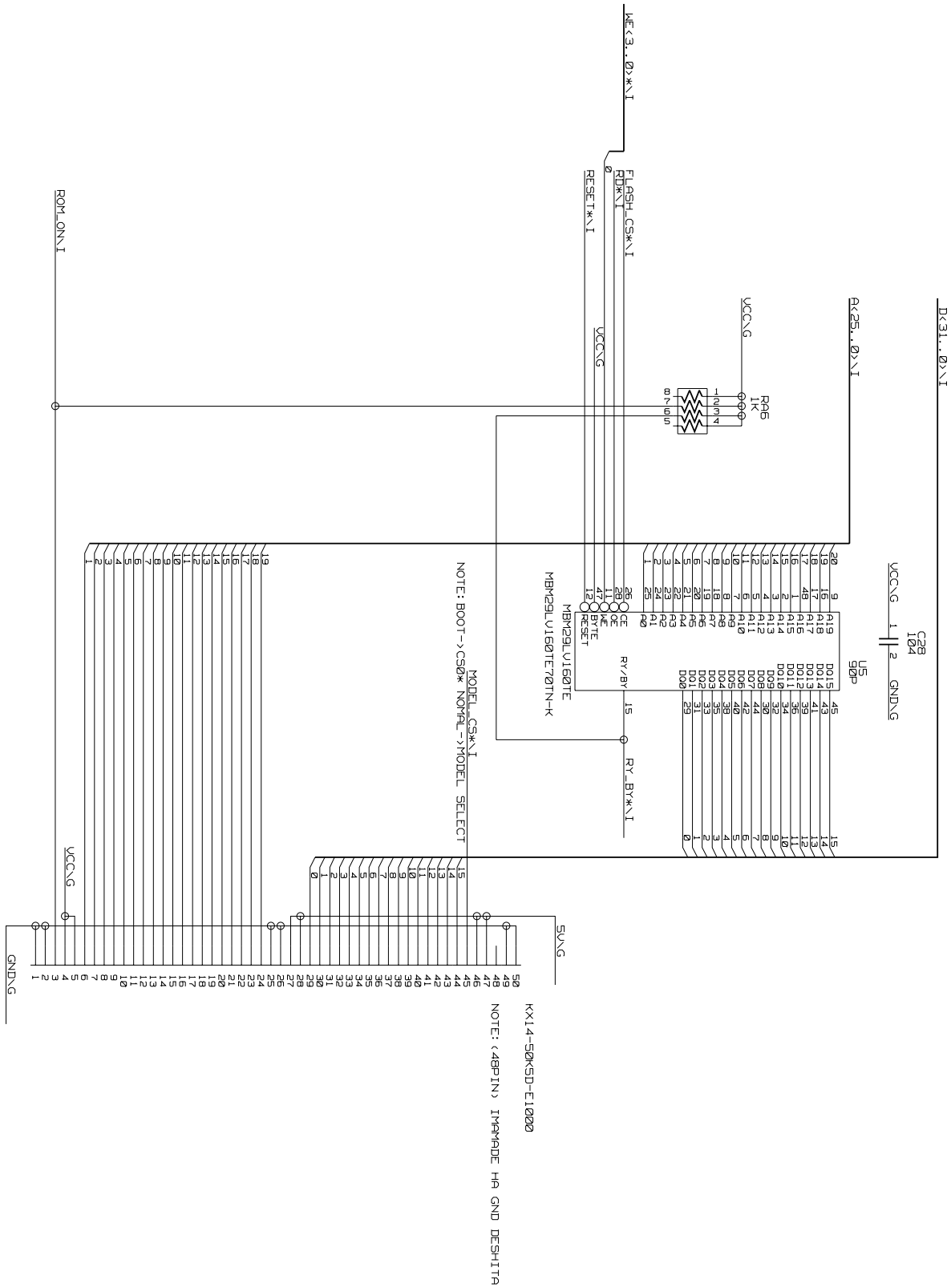
Data Controller Board, CN4091-16A (2/16)



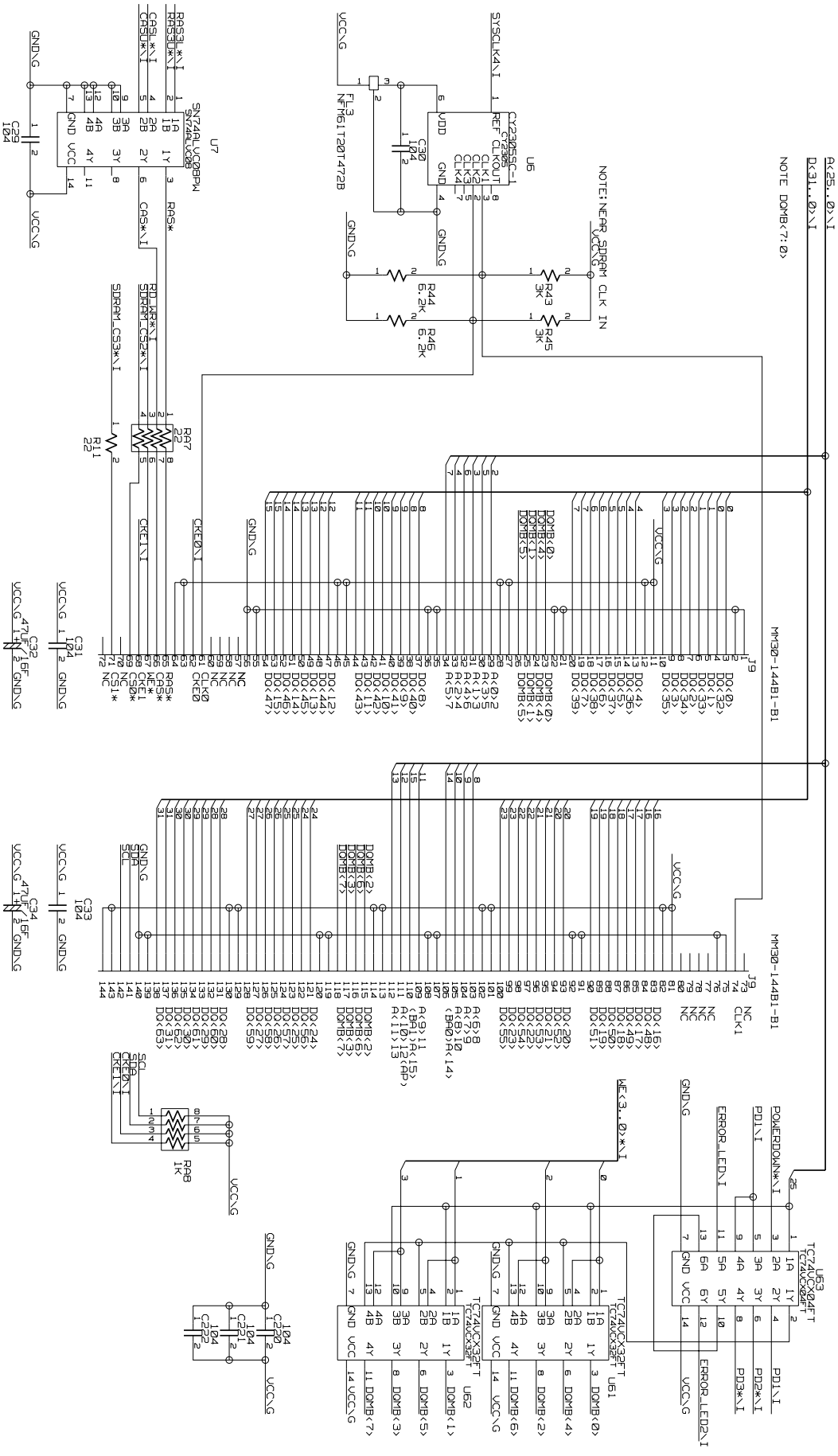
Data Controller Board, CN4091-16A (3/16)



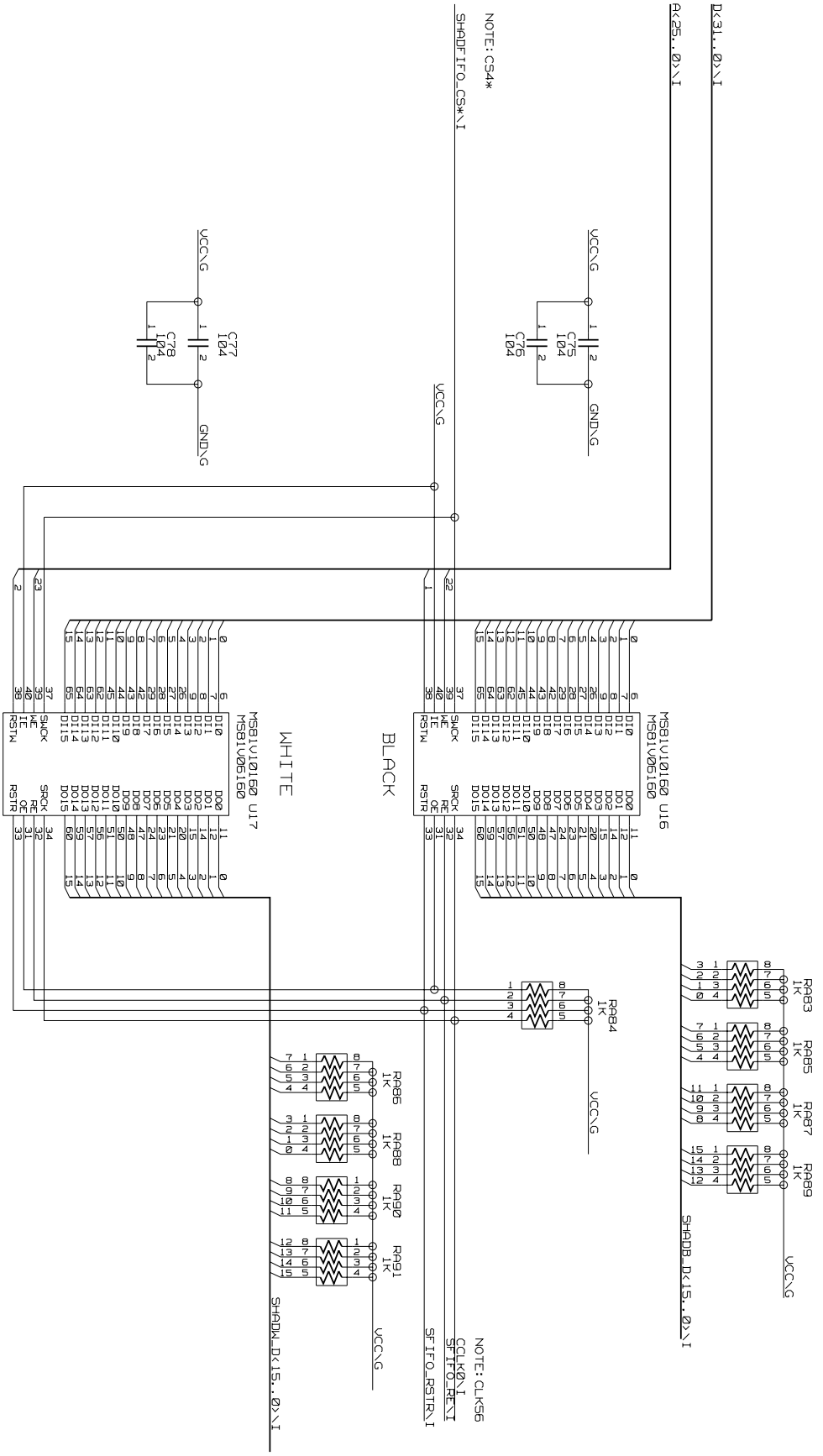
Data Controller Board, CN4091-16A (4/16)



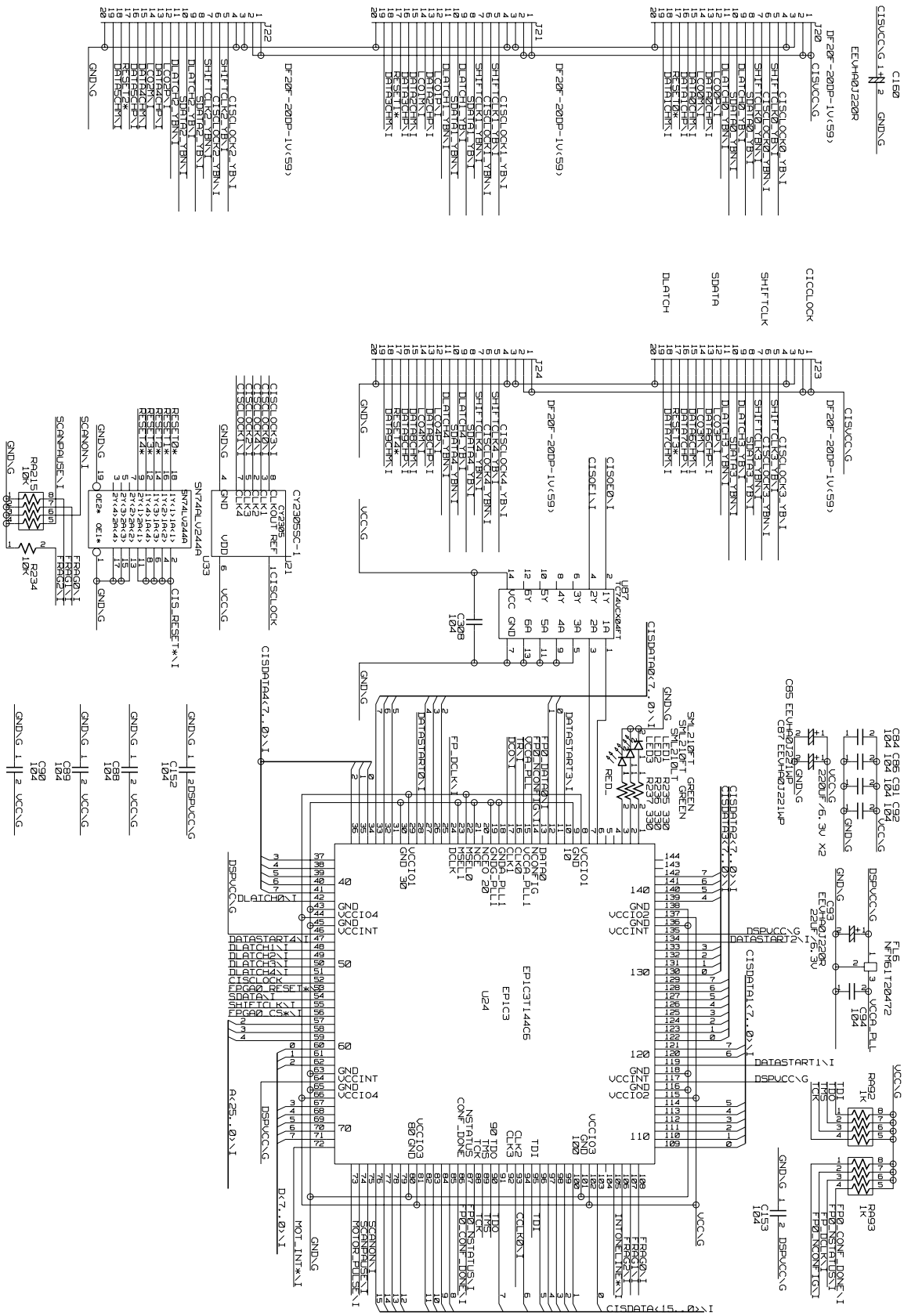
Data Controller Board, CN4091-16A (5/16)



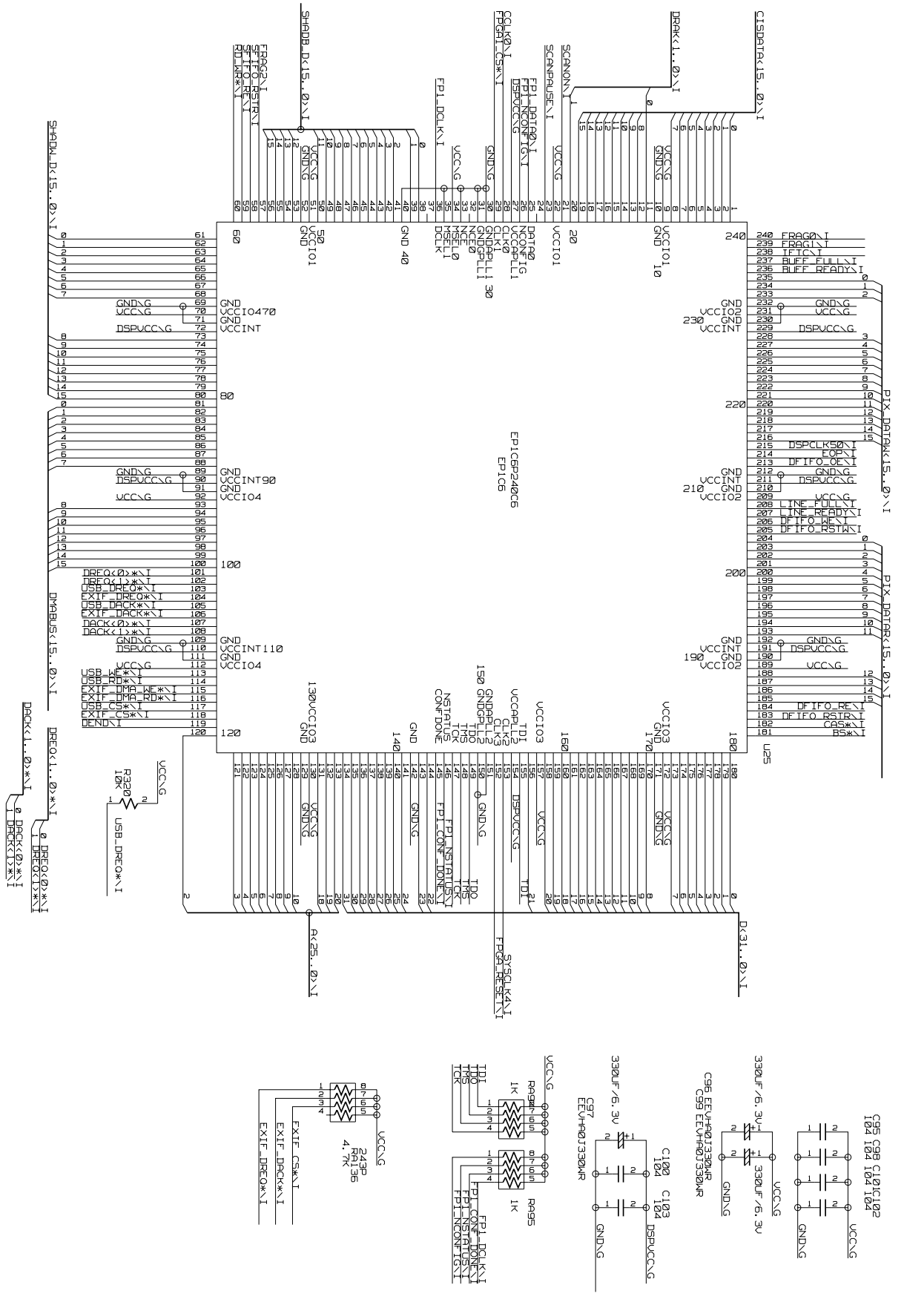
Data Controller Board, CN4091-16A (6/16)



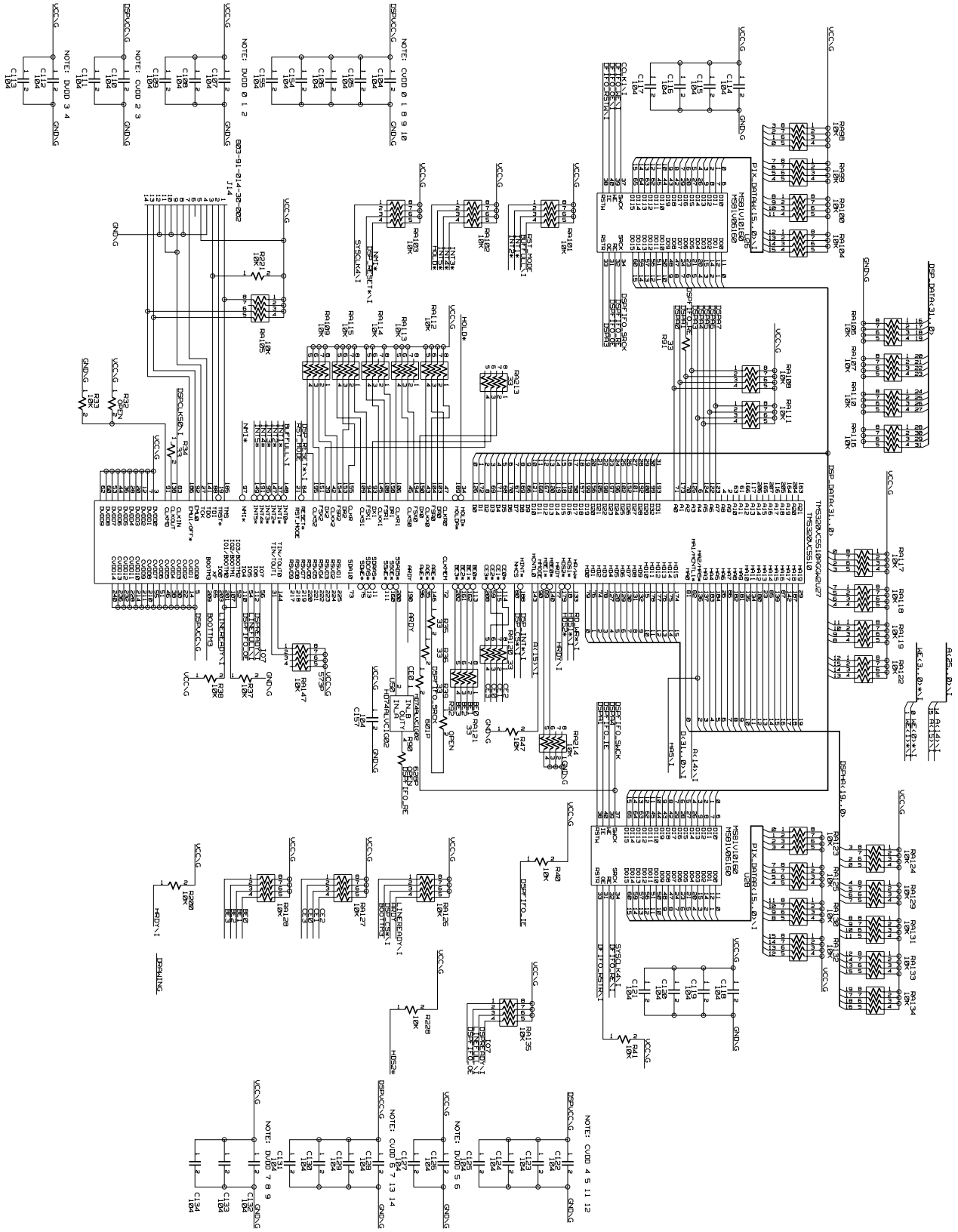
Data Controller Board, CN4091-16A (7/16)



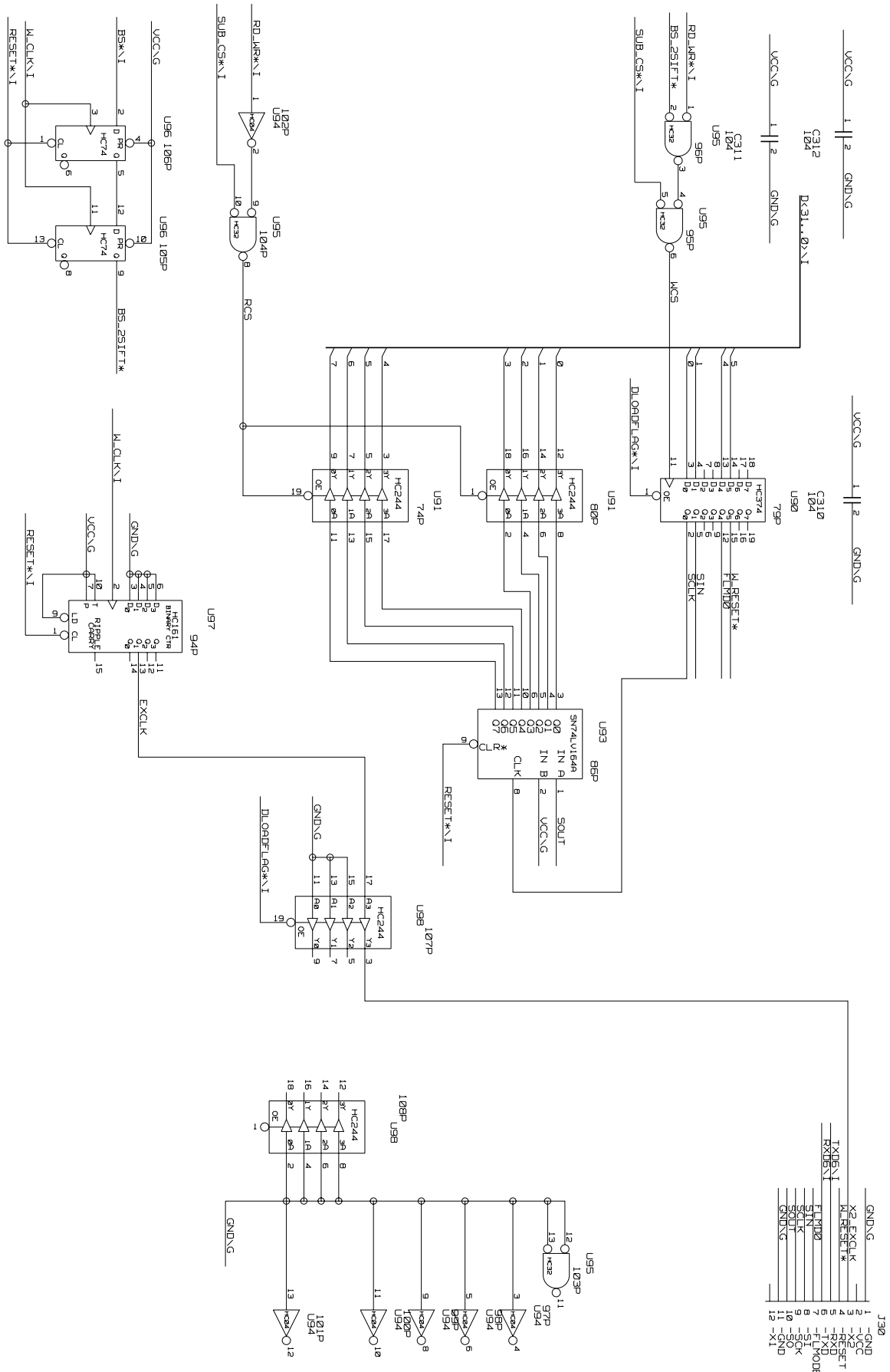
Data Controller Board, CN4091-16A (8/16)



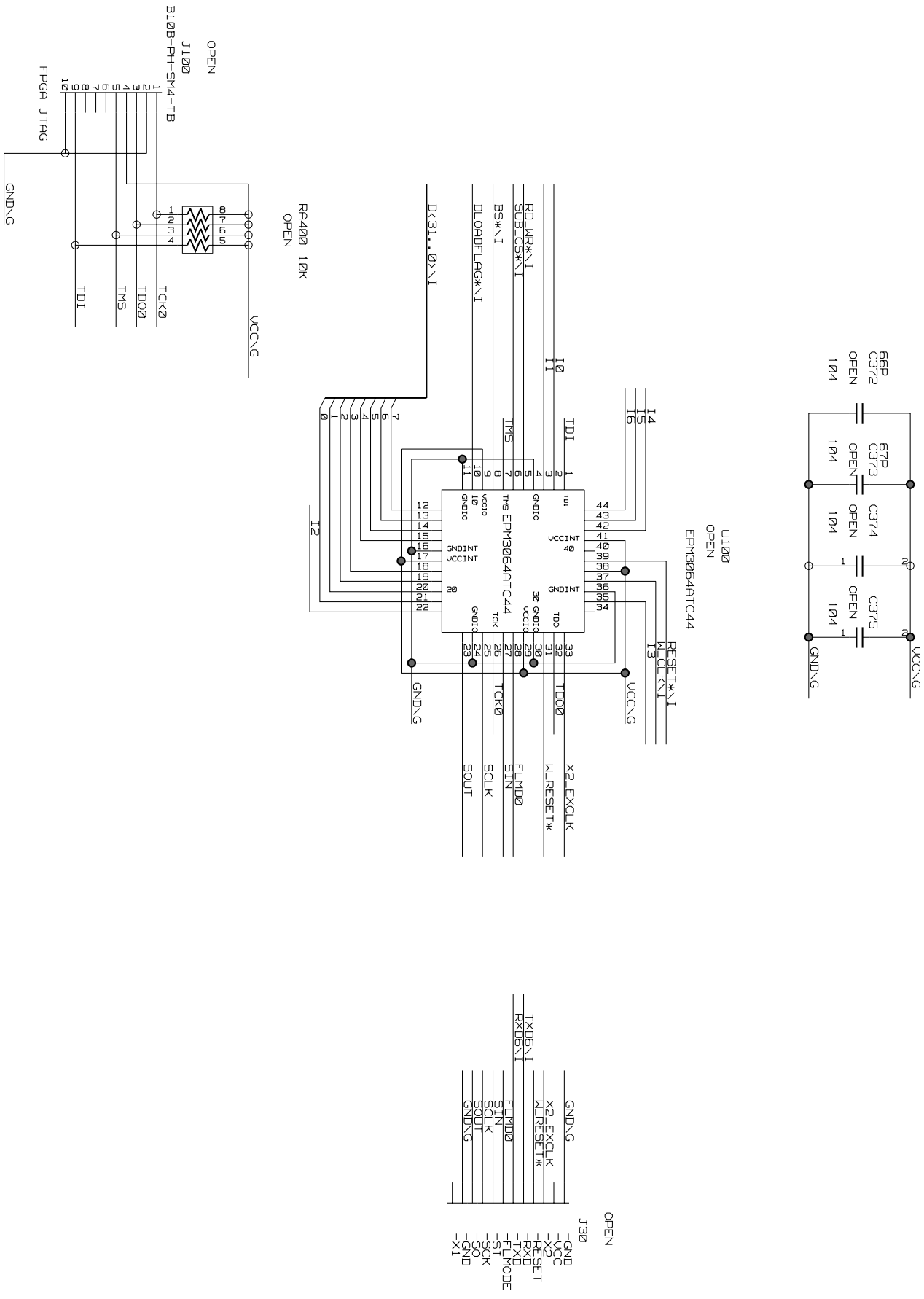
Data Controller Board, CN4091-16A (9/16)



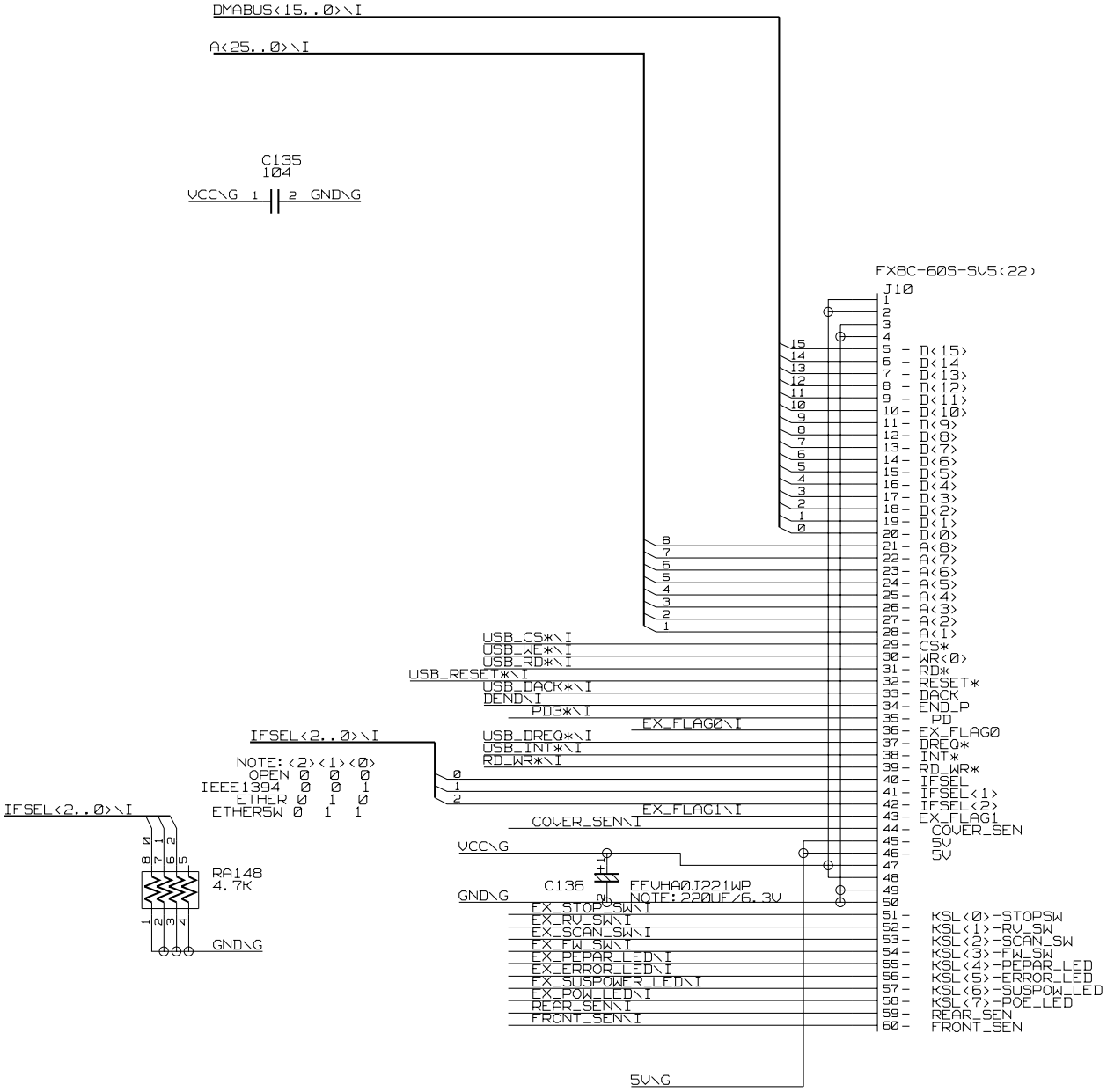
Data Controller Board, CN4091-16A (10/16)



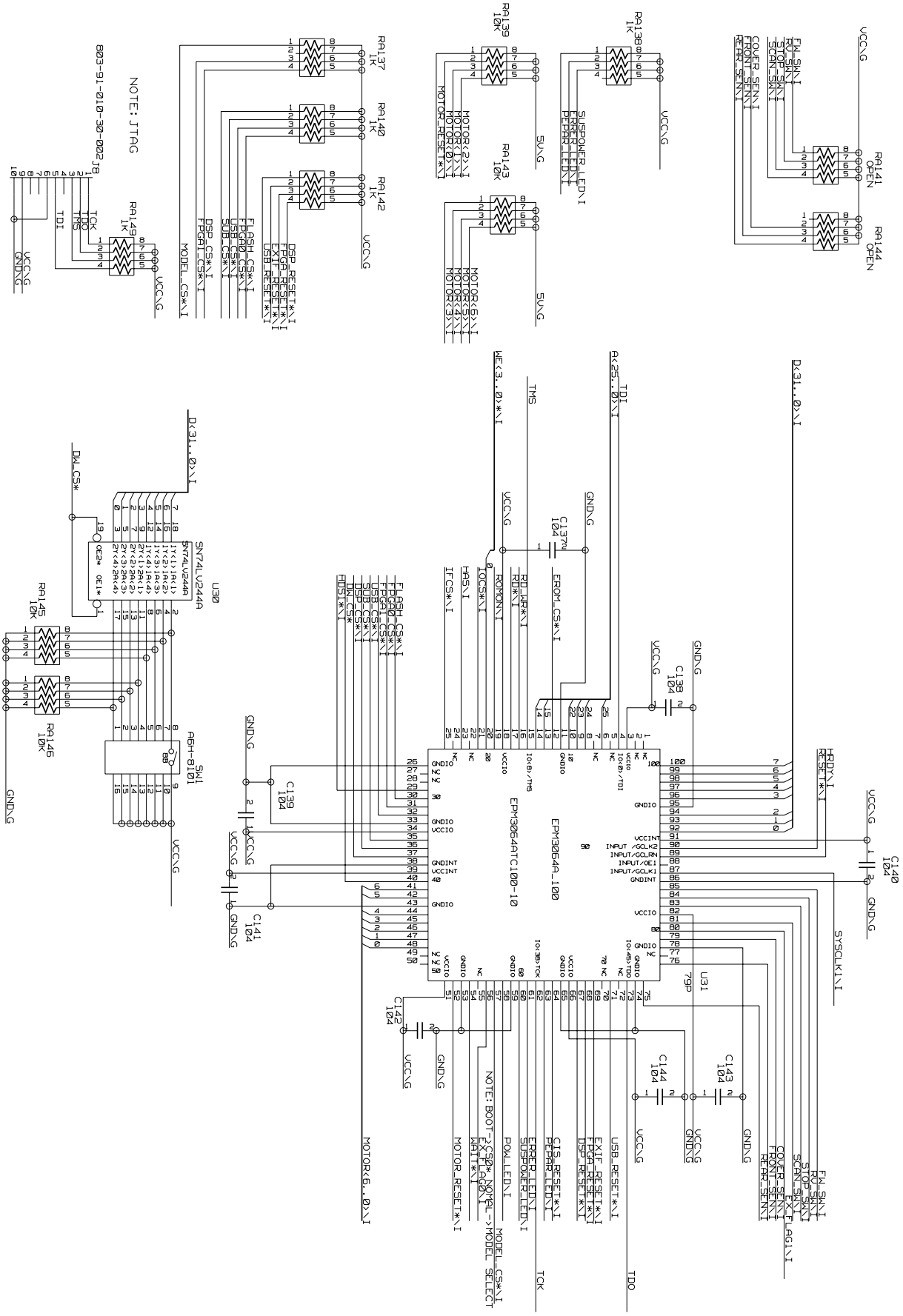
Data Controller Board, CN4091-16A (11/16)



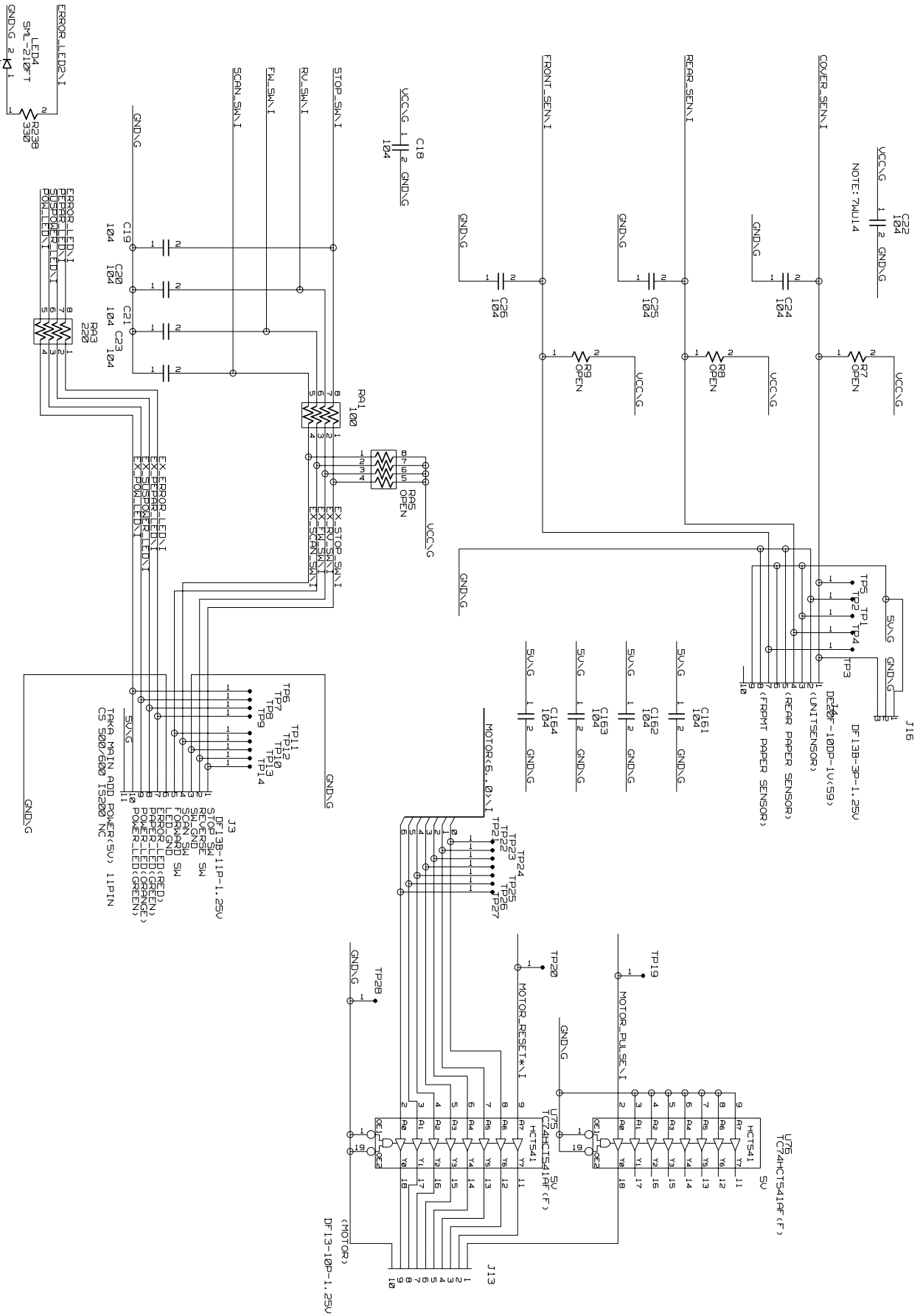
Data Controller Board, CN4091-16A (12/16)



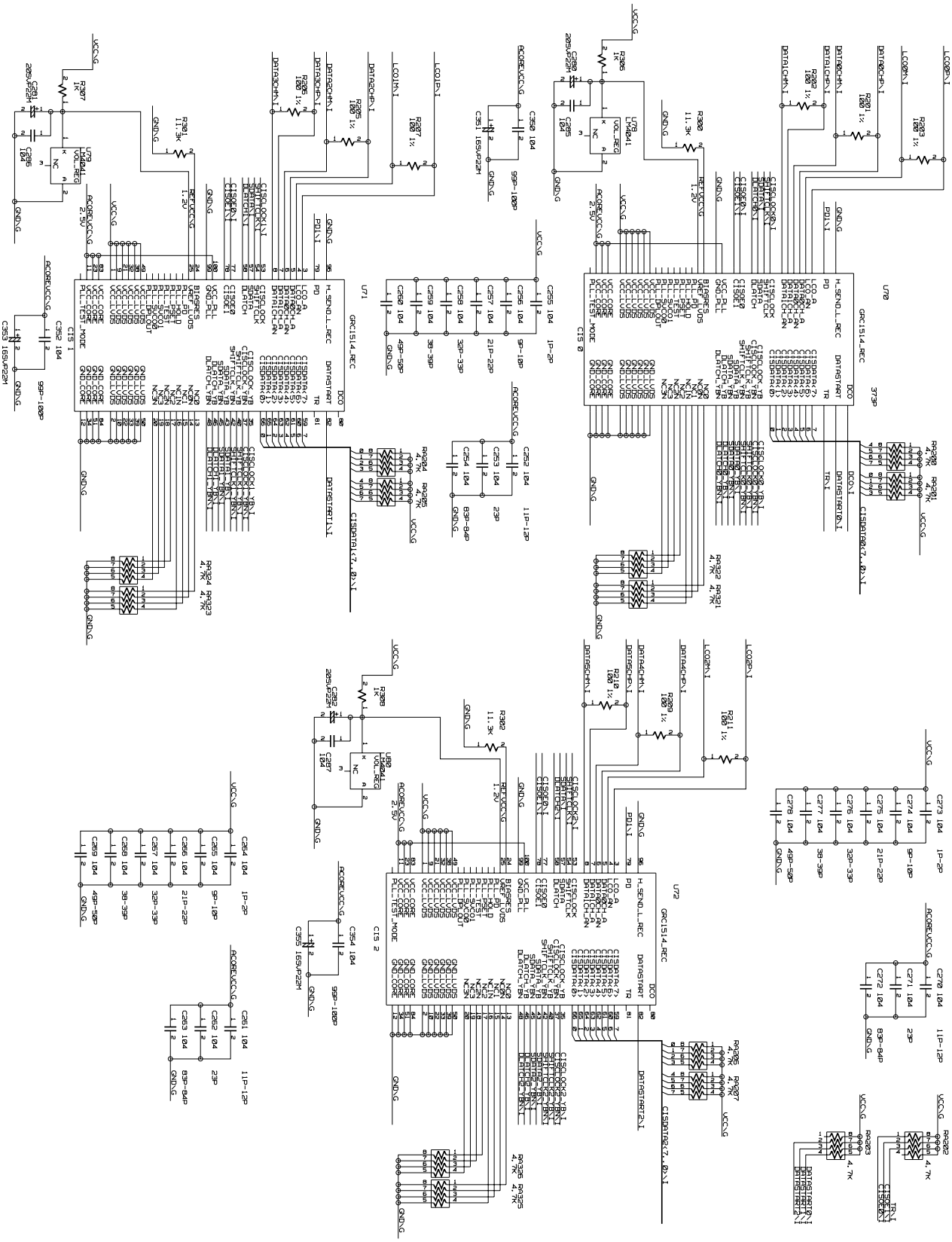
Data Controller Board, CN4091-16A (13/16)



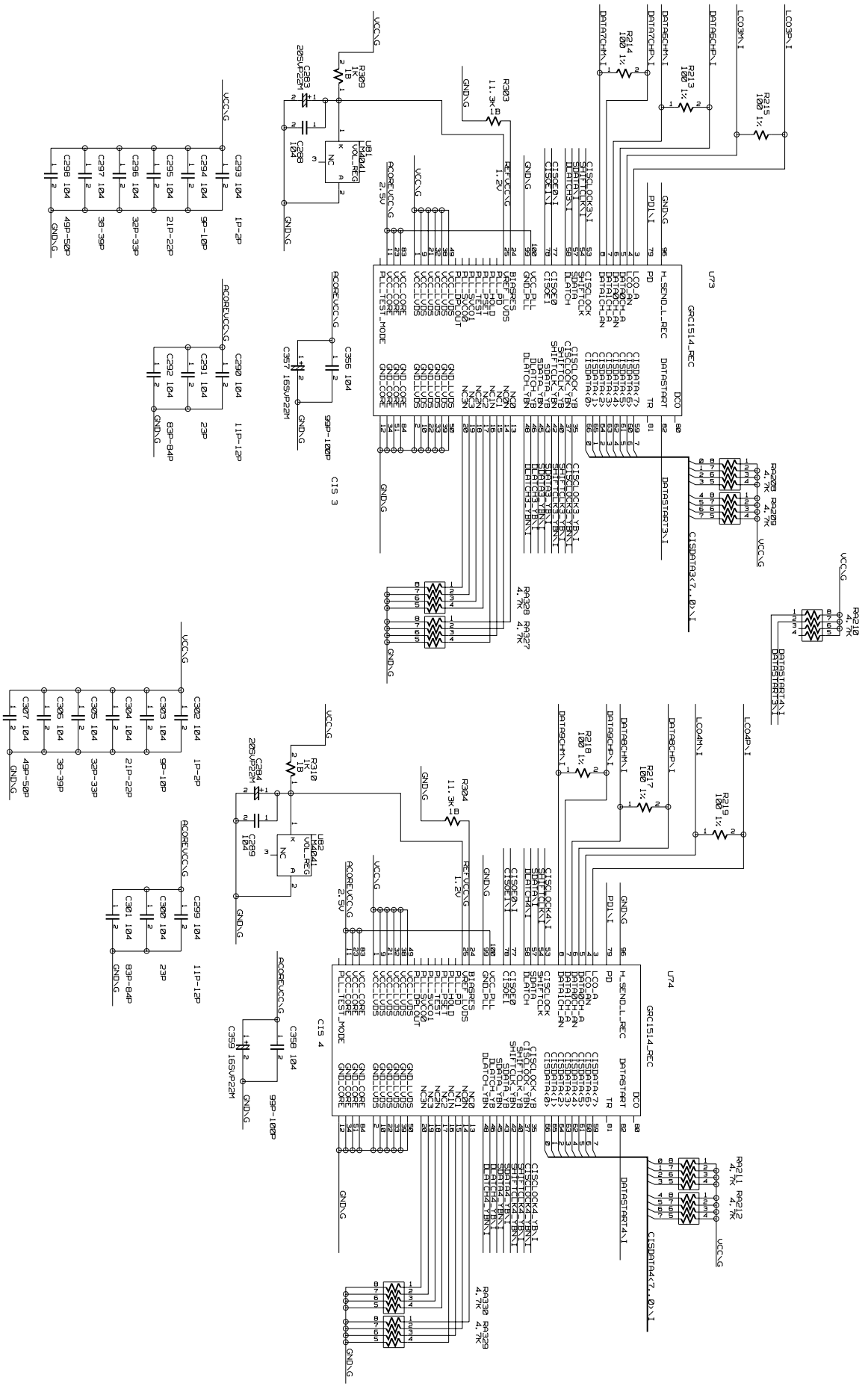
Data Controller Board, CN4091-16A (14/16)



Data Controller Board, CN4091-16A (15/16)

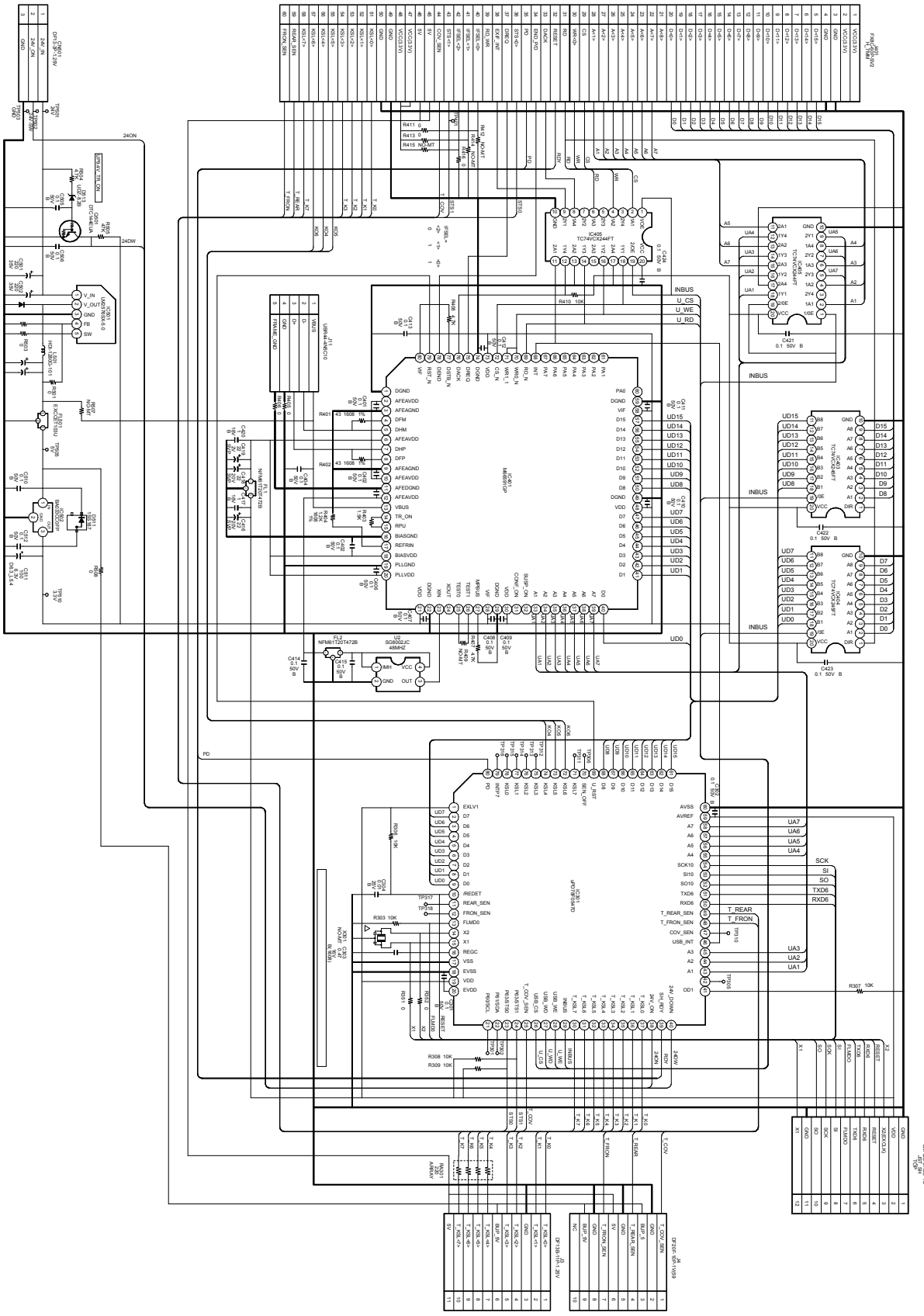


Data Controller Board, CN4091-16A (16/16)



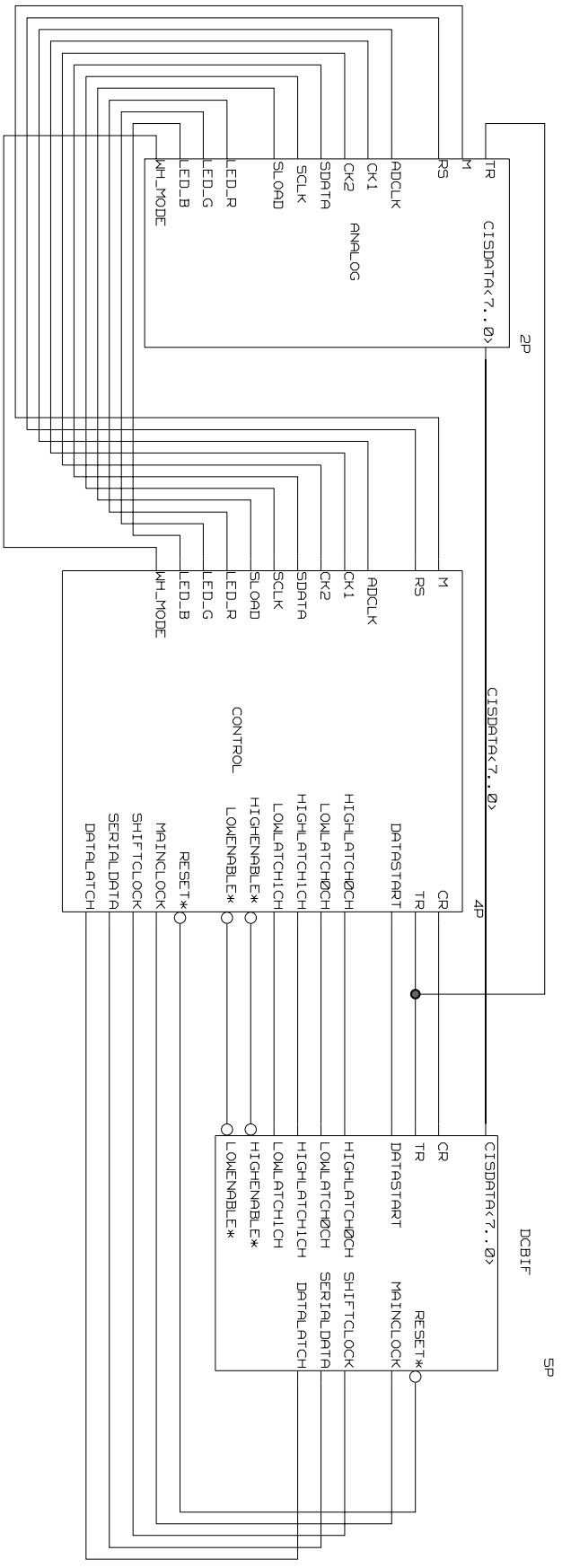
13.2.7 Sub-Data Controller Board for SK200-09-A

Sub-Data Controller Board, CN5091-19A

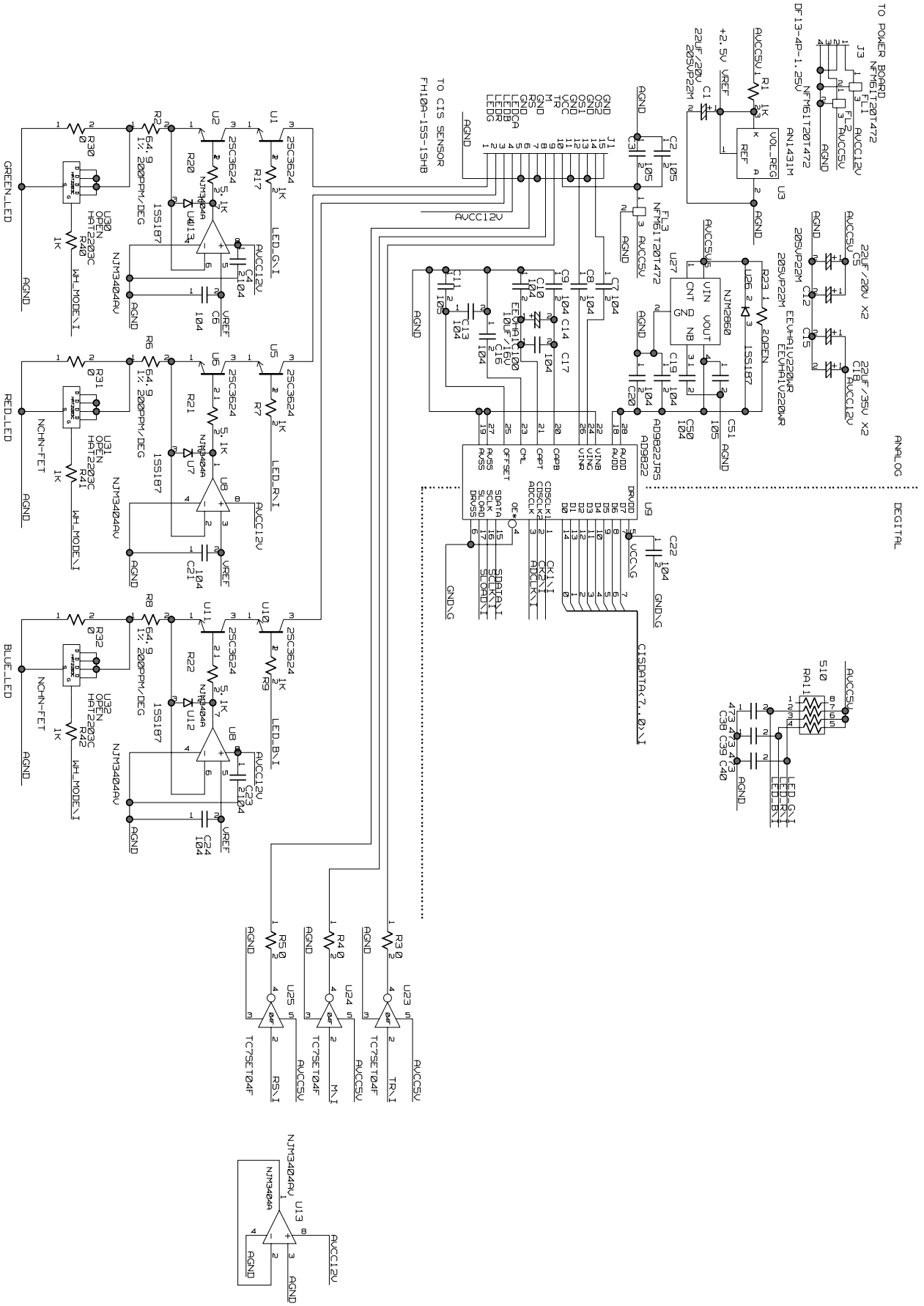


13.2.8 CIS Controller Board for SK200-09-A

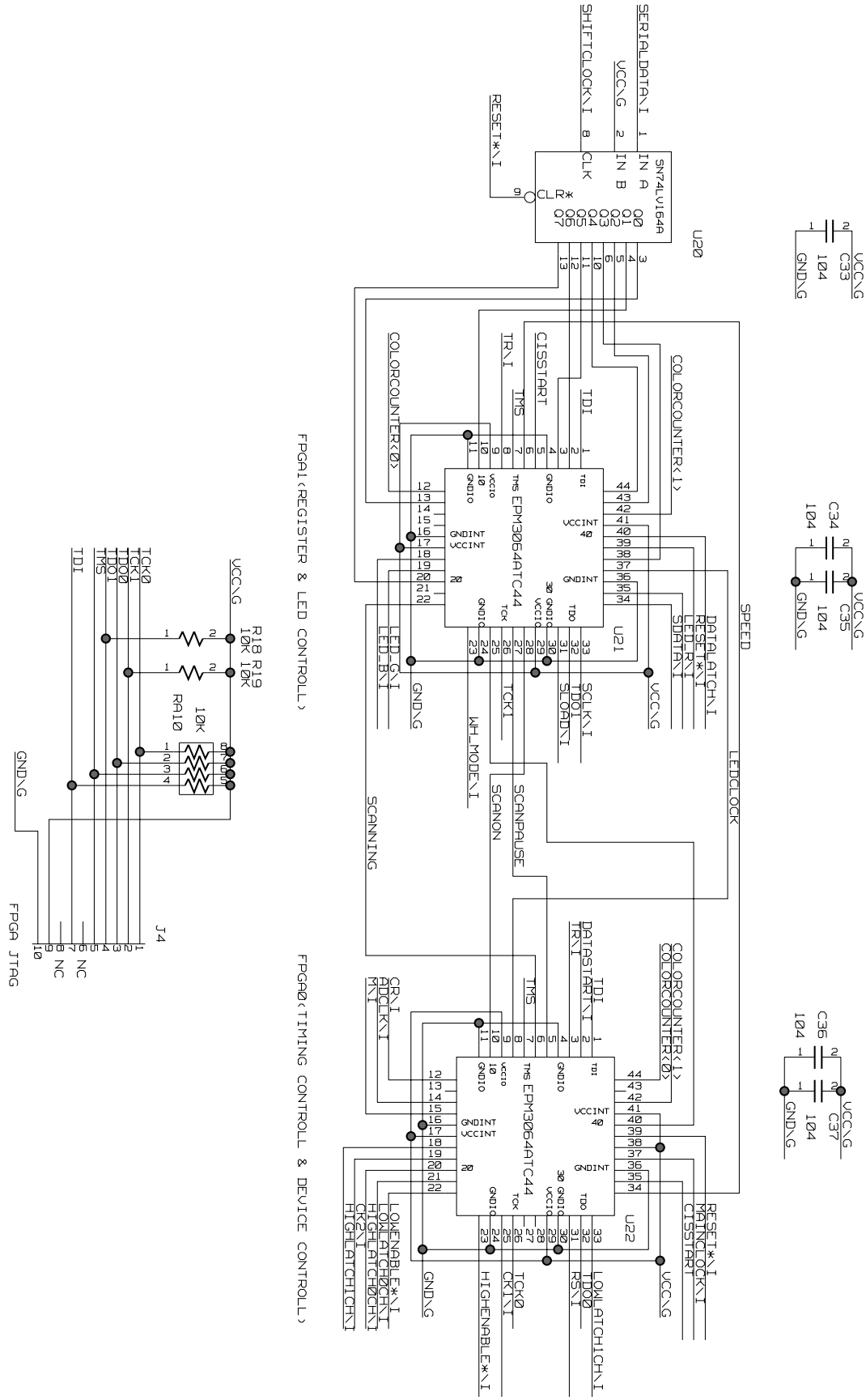
CIS Controller Board, CN5091-18 (1/4)



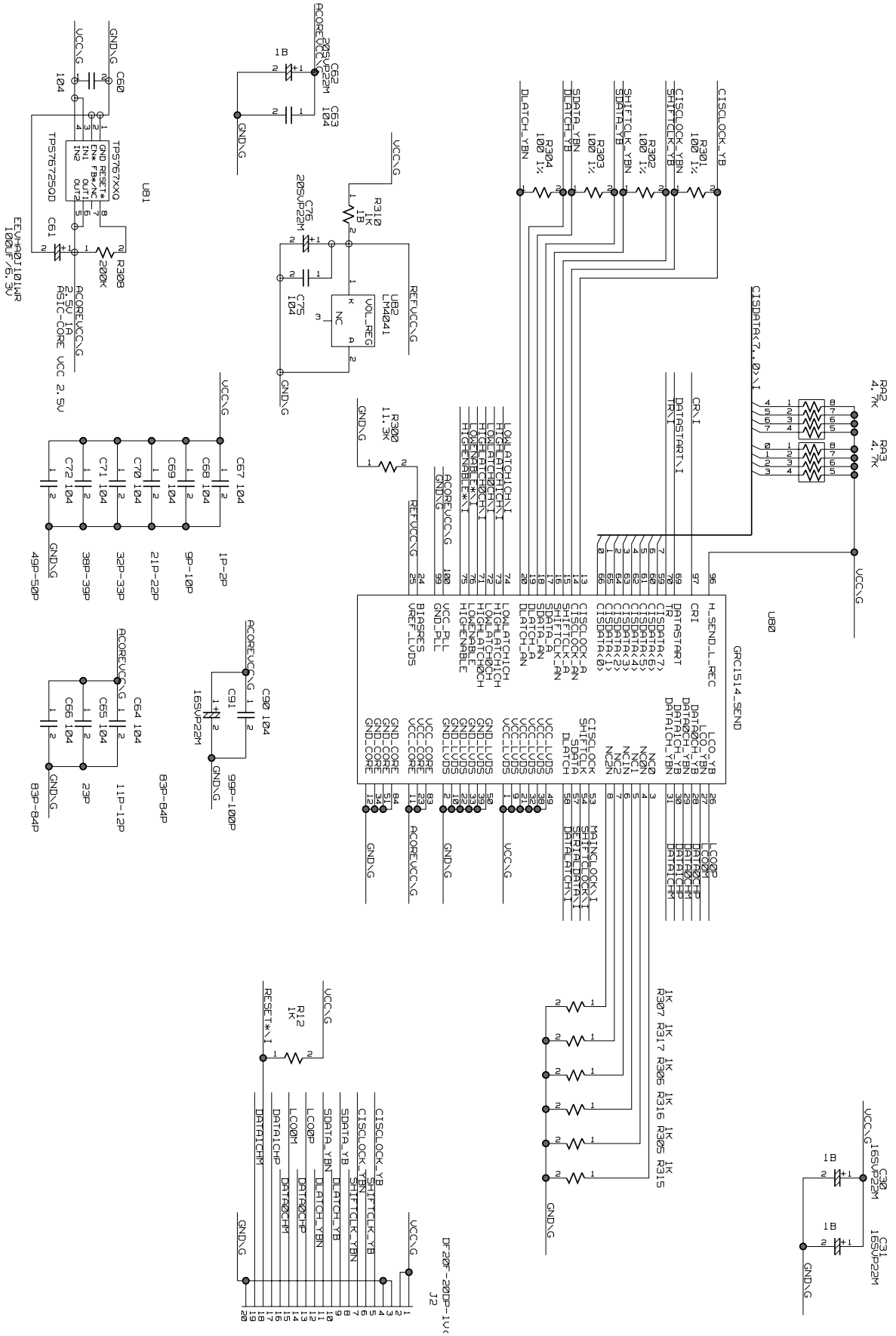
CIS Controller Board, CN5091-18 (2/4)



CIS Controller Board, CN5091-18 (3/4)

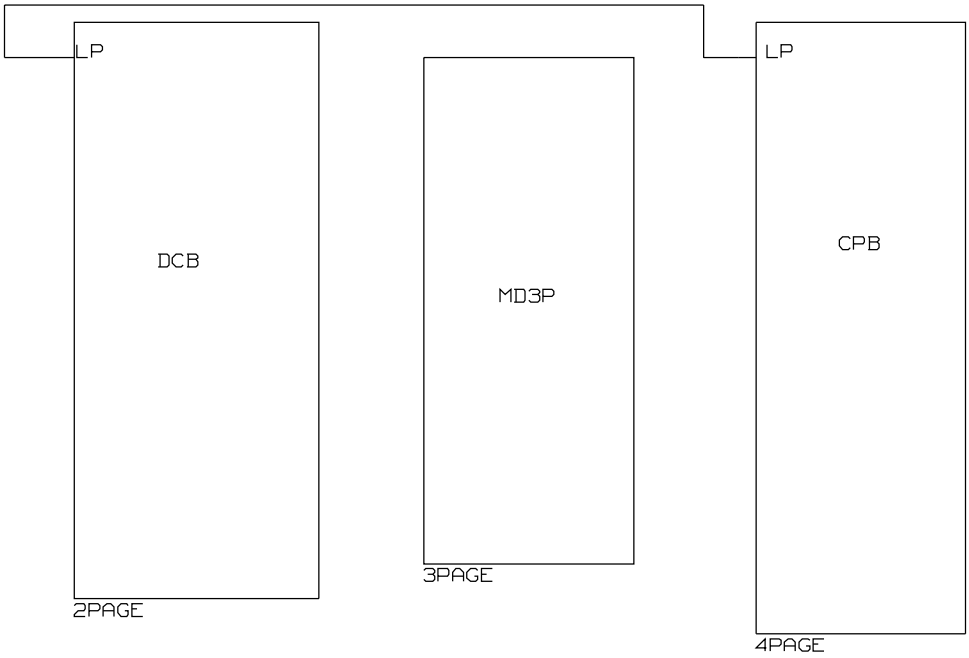


CIS Controller Board, CN5091-18 (4/4)

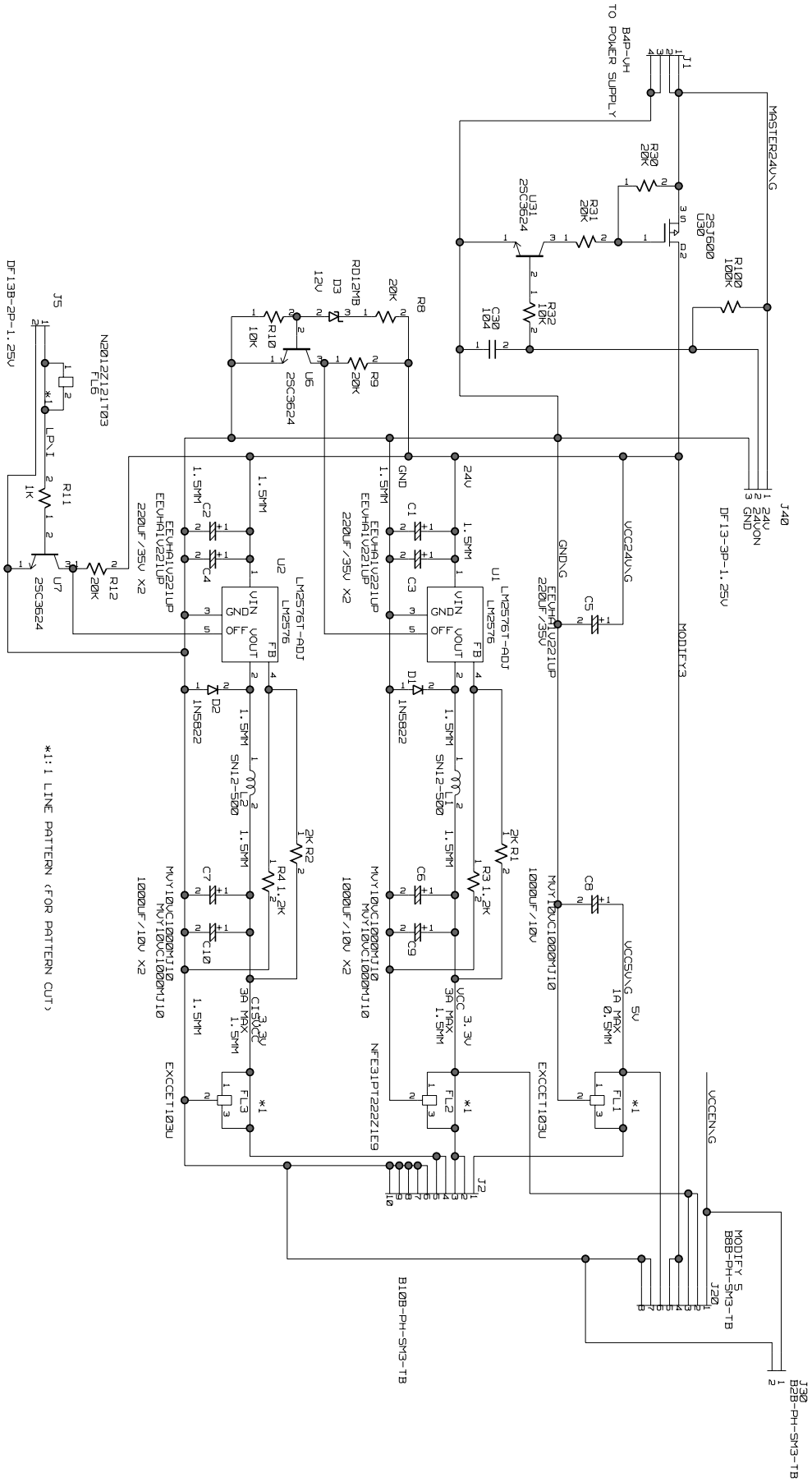


13.2.9 Power Board for SK200-09-A

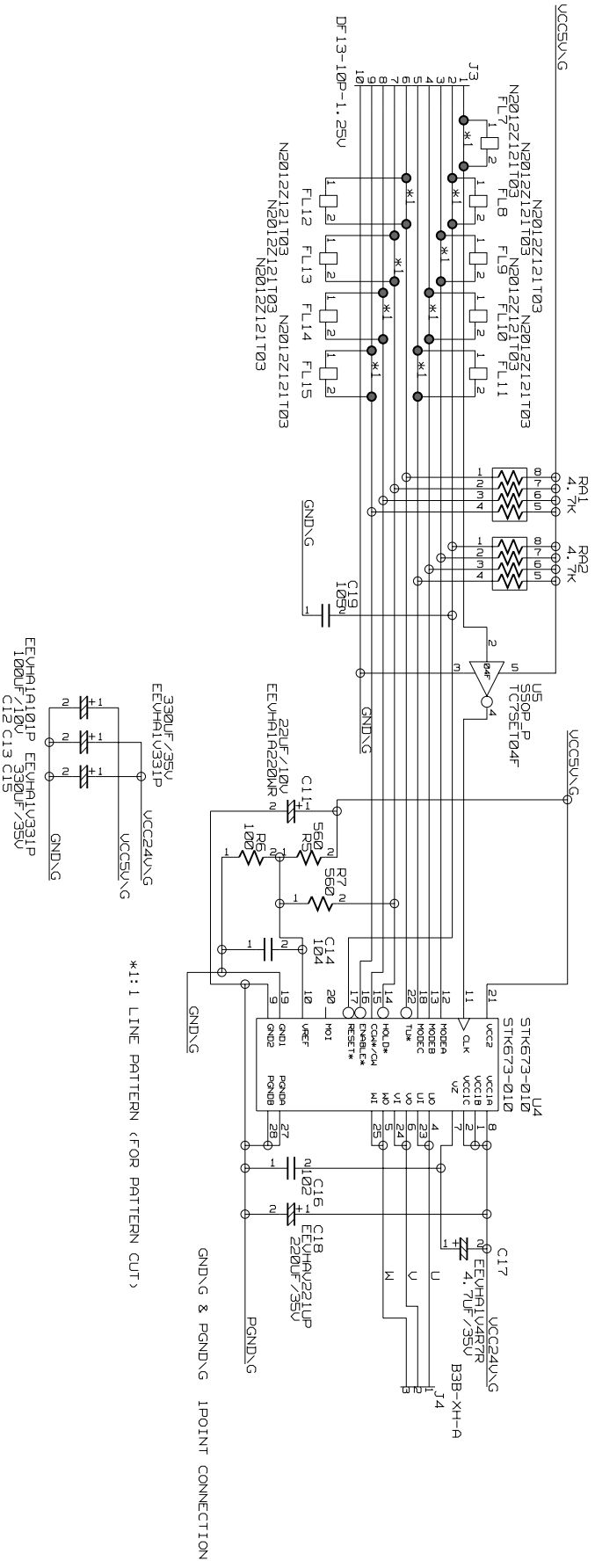
Power Board, CN4091-17A (1/4)



Power Board, CN4091-17A (2/4)



Power Board, CN4091-17A (3/4)



Power Board, CN4091-17A (4/4)